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Urbanism, environment and the building of the Anglo-Egyptian Nile valley, 1880s-1920s

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Abstract

This thesis examines the ways in which imperial officials and others transformed the built environment in Egypt and Sudan in the late nineteenth and early twentieth centuries. This history is used as a way to read the broader project of Nile valley imperialism. It will be shown that architecture and urbanism were elements of a broad project of environmental management, encompassing attempts to restructure the landscape, hydrology, agriculture, politics and society of the region. Whereas existing studies have treated hydrology, politics, or economics as the keys to understanding imperialism in the Nile valley, this project emphasises the connections between these various fields and their realisation through the management of space.

Three intertwined, mutually reinforcing themes flow through this history. The first is violence: the ways in which military conquest and the constant threat of force shaped the development of urban form. British power over Egypt was established with a brief but fierce campaign in 1882, while Sudan was taken by Anglo-Egyptian forces led by Kitchener in a war that lasted from 1896-8. Sudan's capital region was fundamentally shaped by the military railway, and by its first generation of British rulers, military men who planned the new capital at Khartoum and set the priorities of the early British period. The threat of riot and rebellion was also a central aspect of how colonialists viewed cities across the region. The second theme is environment: the cities of Sudan and Egypt are dependent on the unusual ecology of the Nile valley, in which the fertile river banks provide the basis for life. This creates a distinctive form of riverine urban development which has persisted in one way or another for millennia. British responses to this environment shaped their urban as well as agricultural policies. The Aswan Dam, perhaps the most significant hydro-engineering project of the age, was also an impressive building designed to remake the environment. The third theme is infrastructure: in trying to control and dominate the environment, British officials drew on all the technical expertise

available to them, and the region became a site for innovation and experimentation. In this the British were continuing work from the Ottoman period, notably the building of the Suez Canal and its associated new towns at Port Said and Ismailia. Just as rule of Egypt saw the development of new forms of political economy, so the urban and environmental management of the Nile valley involved technological innovation harnessed to the dominant forces of empire and capital.

The Nile defines the flow of this thesis, just as it defines the geography of the region. Rather than reaching from north to south, as imperial power did, this account runs from south to north: from the contested space of Sudan's capital region to the shores of the Mediterranean at Alexandria and Port Said. Four case studies reveal various aspects of British imperial attempts to control the environment: Sudan's capital region is studied to understand how imperial environmental imaginaries interacted with urban planning; images of the first Aswan Dam expose the fragility of imperial ideology, and the centrality of water management in its vision of modernity; the fringes of Cairo reveal the relationship between scientific innovation, suburban development and imperial power; in the final chapter, ancient Alexandria is compared to the modern development of Port Said, in order to shed light on the different roles port cities might play in empire.

This research, exploring a series of case studies through an important region of empire, contributes to the urban environmental history of imperialism. It is the first study to examine the built environment of Egypt and Sudan together. The British Empire has often been understood through global studies or analyses of particular regions (especially the Indian subcontinent): in the Nile valley the global and the local collide and intersect. Thus, this project speaks to both regional and global histories of the British Empire. It builds on the specific environmental and cultural currents at play to establish new connections between attempts to remake the character, economy and environment of colonised societies using the power of the

built environment. It places architectural, urban and environmental frames of analysis in the centre of our understanding of the practice of empire. It is hoped that this will contribute to emerging conversations between historians of politics, environment, science, empire, architecture and urbanism.

Lay summary

This thesis is a history of the British Empire in Egypt and Sudan through the management of cities and the environment. It shows that architecture and urbanism were elements of a broad project of environmental control. Whereas existing studies have treated hydrology, politics, or economics as the keys to understanding imperialism in the Nile valley, this study emphasises the connections between these fields and how they were all involved in the making of particular places. The case studies are: Sudan's capital region, the first Aswan Dam, Cairo's suburban fringes, and the Mediterranean ports of Alexandria and Port Said.

This research contributes to the urban environmental history of imperialism. It is the first study to examine the built environment of Egypt and Sudan together. The British Empire has often been understood through global studies or analyses of particular regions (especially the Indian subcontinent): in the Nile valley the global and the local come together. Thus, this project speaks to both regional and global histories of the British Empire. It builds on the specific environmental and cultural currents at play to establish new connections between attempts to remake colonised societies using the power of the built environment. It places architectural, urban and environmental frames of analysis in the centre of our understanding of the practice of empire. It is hoped that this will contribute to emerging conversations between historians of politics, environment, science, empire, architecture and urbanism.

Acknowledgements

It takes many people to write a PhD thesis, so many that I will only be able to mention some of those who have contributed to this work over the years. Any faults remaining in the final work remain, of course, my own.

The roots of this project lie in my time as an MA student at the Centre for Urban History, University of Leicester. There Prashant Kidambi introduced me to the study of colonial urban history, Roey Sweet guided me through the many ways the city in history has been studied, and James Moore supervised my first piece of research in this area, a dissertation on All Saints' Cathedral, Khartoum. I also benefited from many conversations with the wider community of students and scholars at Leicester, especially those associated with New History Lab. Deborah Toner, Katy Roscoe, Matt Wale , Katie Palmer-Heathman, Nicola Blacklaws, Joe Harley, Duncan Wannell and Michael Tibke (to name only a few) all shaped my thinking at this time in ways that cannot now be traced.

The Edinburgh School of Architecture and Landscape Architecture has been a stimulating home throughout my time as a PhD student. I am especially indebted to those scholars who guided me through the unfamiliar waters of architectural history, both within and outwith the classroom. These include Richard Anderson, Alistair Fair, Ian Campbell, Alex Bremner and Elizabeth Petcu. I have also been fortunate to know a warm and brilliant group of fellow students across the university, among them Tomasso Zerbi, Nick Mols, Frances Blythe, Krysten Blackstone, Laura Harrison, Meaghan Allen, Sarah Hendricks, Felix Green, Graham Shawcross and Pablo Jimenez Moreno. At Edinburgh and beyond, I have also greatly enjoyed working with *Pubs and Publications* editors past and present, who have repeatedly shown that PhD students can do brilliant collaborative work independent of formal institutions.

A number of funding bodies have made this research possible. Most notably, the Society of Architectural Historians of Great Britain generously funded my studies, allowing me to pursue this project full-time in a way I did not think would be possible. The SAHGB has also been a great source of intellectual support, notably from Julian Holder and Susie West, but also from attendees at the annual Architectural History Workshop. My fellow studentship holders and workshop organisers Keiran Mahon, Sydney Ayers, Horatio Joyce, Danielle Hewitt and Elizabeth Deans Romariz have been wonderful colleagues and co-conspirators. Smaller research grants from the Paul Mellon Centre for Studies in British Art and the Royal Historical Society were also enormously helpful.

Parts of this project have been presented and discussed at various events over the years, including: Reading Architecture Across the Arts and Humanities (University of Stirling, 2015); the Colonial and Postcolonial New Researchers' Network (Institute of Historical Research, London, 2016); Water, a conference organised by the Northern Nineteenth-Century Network (Leeds Trinity University, 2017); Geographies of World History (University of Cambridge, 2017); Urban History Group Conference (Keele University, 2018); European Association for Urban History Conference (University of RomaTre, 2018); The Pursuit of Global Urban History: A Dialogue Between Two Fields (University of Leicester, 2019); and the World History Workshop (University of Cambridge, 2019). Attendees at all of these have asked questions and presented work that spurred further research and rethinking, and this final thesis would look very different without their input. For a stimulating and enjoyable *viva voce* exam, thanks to my examiners Sarah Longair and Peter Clericuzio. There are those who say that you should not acknowledge your supervisor, as they are simply doing their job, but this seems a needlessly stilted attitude to me. Warm thanks, therefore, to the ever patient and excellent Alex Bremner.

The most important debts I have left until last. My family has been extraordinarily supportive both practically and emotionally throughout my graduate studies, and I would not have achieved anything that I have without them. During these years I also met the love of my life, Virginia Calabria. I have no words to express what she means to me, and so this work is dedicated to her.

Contents

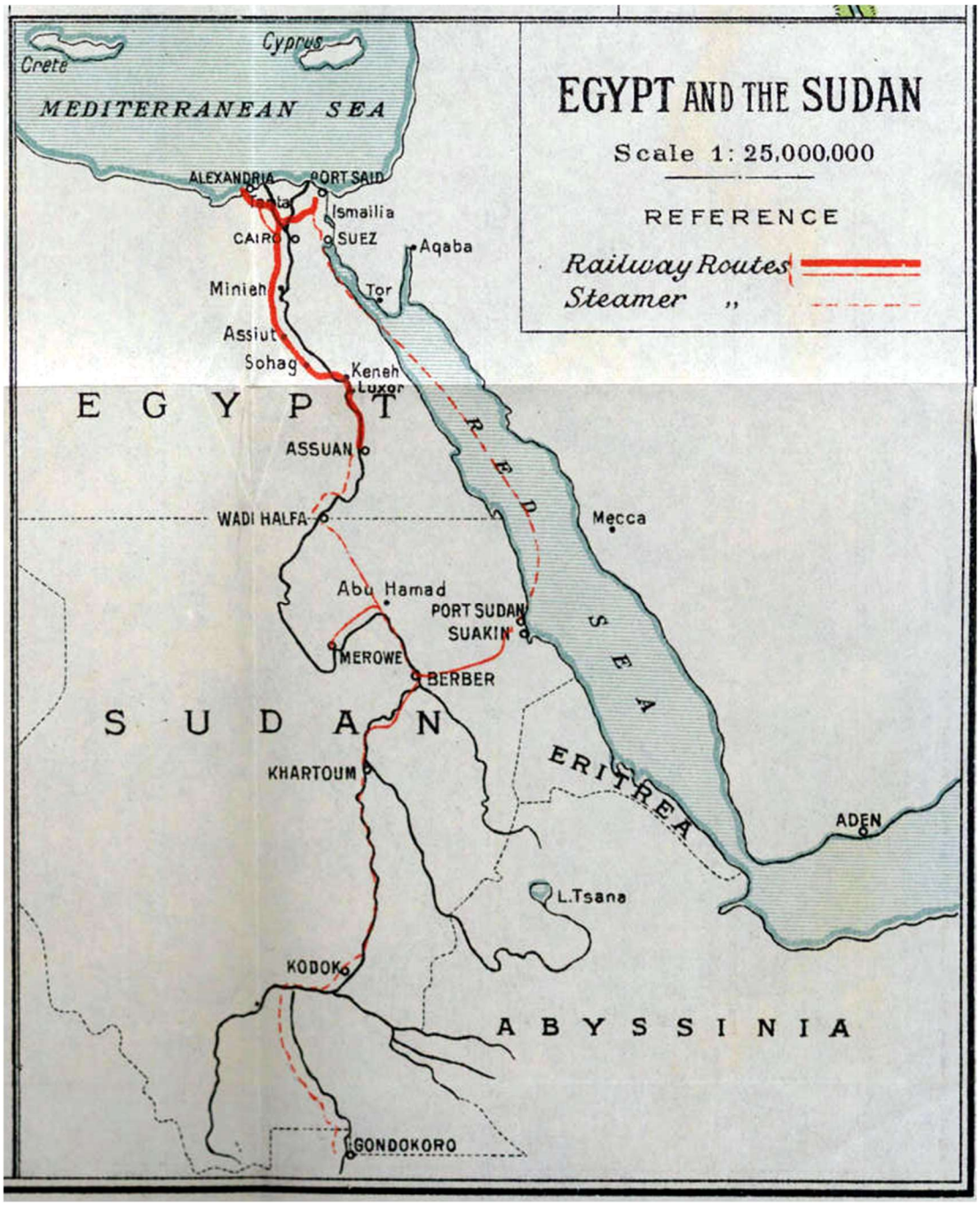
List of illustrations (for full references see individual captions)

Note on spellings and capitals

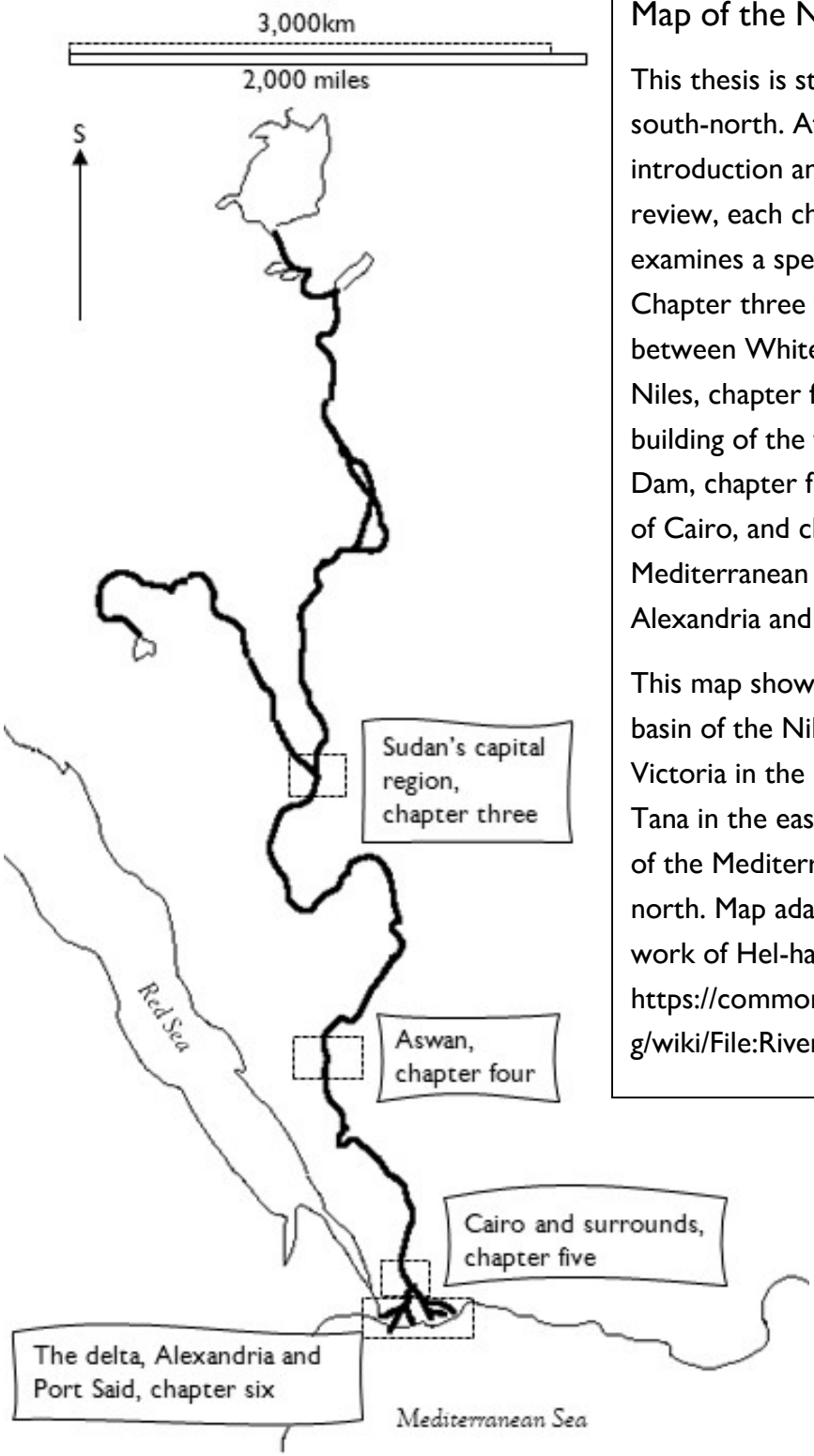
For ease of reference, I have used the most widespread transliterations of Arabic place and person names, rather than stick to a rigid system. Current use was judged against Wikipedia and Google Maps entries (thus Roda Island not Rodah or Rhoda, Ismail not Is'mail). This is to ensure accessibility to non-specialists, but does sacrifice some accuracy. The sources I cite use a wide range of spellings, and rather than standardise these I have left them intact. To aid reading, I have not marked these instances *sic*; all quotes are exact unless noted otherwise.

Some terms were imported to colonial English from Arabic or local languages in order to describe the region, such as pik for the Nile flood measurements or sudd for the floating vegetation in the White Nile. I have not, in general, italicized these terms because they are not foreign to the places under discussion. I explain them as they arise, just as I have with specific scholarly terms.

In discussing racial concepts I have capitalised White and Black, following conventional practice in the scholarship on racism. This signals that these are socially structured ideas rather than neutral adjectives, and avoids the need for excessive use of 'scare quotes.' West and East are treated similarly, except where they are used purely geographically. Thus: western Cairo, but Western literature.



1908 map of railway and steamer routes in the Nile valley in 1908. From Egypt & how to see it *created by the Cairo Survey Department and held by the American University in Cairo Historic Maps Digital Collection http://digitalcollections.aucegypt.edu/cdm/ref/collection/p15795coll6/id/151.*



Map of the Nile valley

This thesis is structured south-north. After the introduction and literature review, each chapter examines a specific site. Chapter three the confluence between White and Blue Niles, chapter four the building of the first Aswan Dam, chapter five the suburbs of Cairo, and chapter six the Mediterranean ports of Alexandria and Port Said.

This map shows the whole basin of the Nile, from Lake Victoria in the south and Lake Tana in the east to the shores of the Mediterranean in the north. Map adapted from the work of Hel-hama https://commons.wikimedia.org/wiki/File:River_Nile_map.svg

Chapter 1

Introduction

Robert Weir Schultz, German-Scottish architect of the arts and crafts school, designed only one building outside the British Isles.[1] He was approached to build Khartoum's first Anglican Cathedral in 1906 **(figure 1-1)**, after the church committee lost patience with Ernest Richmond of the Cairo Public Works Department. Richmond had produced a Byzantine style design, but it was considered far too expensive to construct, and his alternatives did not please the committee. One of Schultz's first requests was for samples of the ground on which the church would be built.[2] The committee provided these at some expense, noting that when sodden by the Nile's floodwaters the earth of Khartoum became thick and heavy, in sharp contrast to its usual dry, dusty state. Concerned that this exotic soil could not be relied on, Schultz designed expansive concrete foundations. He advised that the project should proceed carefully, building the main structure before the church tower, so that if there were any problems caused by the unstable ground they could be identified and dealt with. Important aspects of the architecture thus emerged from the ground upwards.

The research presented here traces the connections between colonial architecture and urbanism, on the one hand, and approaches to landscape, environment and hydrology on the other. It examines the built environment of Egypt and Sudan during the early period of British rule, roughly from the 1880s to the 1920s. It uncovers the project of Nile valley imperialism shared by planners, engineers,

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[1] For an overview of Weir Schultz's work see David Ottewill, 'Robert Weir Schultz (1860-1951): An Arts and Crafts Architect', *Architectural History* 22 (1979): 88–172, https://doi.org/10.2307/1568373; for an analysis of the design for Khartoum Cathedral see Robin Cormack, 'Unity Out of Diversity? The Making of a Modern Christian Monument in Anglo-Egyptian Sudan', in *From Plunder to Preservation: Britain and the Heritage of Empire, c.1800-1940*, ed. Astrid Swenson and Peter Mandler, Proceedings of the British Academy (Oxford: Oxford University Press, 2013), 63–90.

[2] R. W. Schultz, Memorandum to the church committee, Sudan Archive Durham University (SAD) 838/9/17. See also R. W. S. Weir, 'The Cathedral of All Saints, Khartoum, Sudan', *The Builder*, 1916 [Schultz went by his mother's maiden name Weir during the First World War to avoid anti-German prejudice].

architects and officials. From the bombardment of Alexandria in 1882 to the Suez crisis of 1956, Britain sought to dominate the north-east of Africa. Before the political upheavals of the 1920s, this domination took the form of a unified approach to the Nile valley that prioritised the cotton fields of northern Egypt and political stability in Cairo.[3] The British mission in the region was concerned with economic extraction, and with ensuring continued access to the Indian Ocean via the Suez Canal. When Egyptians began to win a measure of autonomy in the 1920s, this unified Nile valley policy began to shift. In this thesis I provide the first history of the built environment during the early period, when the Nile valley was largely treated as greater Egypt.

Figure 1-1 Former All Saints' Cathedral, now Republican Palace Museum, Khartoum, Sudan. P. A. Dohnalek, 2009, Wikimedia commons, Creative Commons Attributions-ShareAlike 3.0.

[3] This sketch of the timeline is drawing on Terje Tvedt, *The River Nile in the Age of the British: Political Ecology and the Quest for Economic Power*, Paperback [first hardback edition 2004] (London/New York: I. B. Tauris, 2016); see also Martin W. Daly, *The Cambridge History of Egypt. Vol. 2, Modern Egypt from 1517 to the End of the Twentieth Century* (Cambridge: Cambridge University Press, 2008); Martin W. Daly, *Empire on the Nile: The Anglo-Egyptian Sudan, 1898-1934* (Cambridge: Cambridge University Press, 1986).

The River Nile runs through this history.[4] The world's longest river rises as the White Nile in the lakes of Uganda and as the Blue Nile in the highlands of Ethiopia. These two flows gather together in Sudan's capital region, and are reinforced by the Atbarah tributary to the north. After this point, the river runs for 1,670 miles through the desert with no new water added. The annual flood carries silt from sub-Saharan Africa to the Mediterranean, depositing it along the river banks to produce some of the world's most fertile land.[5] At least, such was the system until twentieth-century dams began to store vast quantities of water at Aswan.[6] The Nile is essential to the human settlements of Egypt and Sudan. Its course shapes the location and form of the cities and agriculture of the region. The nineteenth century saw momentous shifts in how hydrology was conceived: whereas for millennia people had constructed small-scale barrages and channels to harvest the Nile's floodwaters, now there were grand attempts to force the river to dispense its water in a more reliable way. Muhammad Ali, the great modernising Khedive of Cairo under the Ottoman Empire from 1805 to his death in 1848, was the first to call for designs that would deliver perennial irrigation. A system of barrages was constructed to divert the river into various storage culverts that could be used to store water through a longer period of the year.[7] During the decades of mounting financial crisis that followed Ali's death, this system fell into disrepair as money was ploughed into, among other grand projects, the Suez Canal. This neglect persisted

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[4] A good overview of the Nile's history can be found in Henri J. Dumont, 'A Description of the Nile Basin, and a Synopsis of Its History, Ecology, Biogeography, Hydrology, and Natural Resources', in *The Nile: Origin, Environments, Limnology, and Human Use*, ed. Henri J. Dumont, Monographiae Biologicae 89 (Dordrecht, Netherlands: Springer, 2009), 1–22; the most significant historians of the Nile under the British are Robert Collins and Terje Tvedt, see: Robert O. Collins, *The Waters of the Nile: Hydropolitics and the Jonglei Canal, 1900-1988* (Oxford: Clarendon Press, 1990); Robert O. Collins, *The Waters of the Nile: An Annotated Bibliography* (London: Hans Zell, 1991); Tvedt, *The River Nile in the Age of the British*; Terje Tvedt, 'Hydrology and Empire: The Nile, Water Imperialism and the Partition of Africa', *The Journal of Imperial and Commonwealth History* 39, no. 2 (June 2011): 173–94, https://doi.org/10.1080/03086534.2011.568759.

[5] Year-round sunshine means that the agricultural land of Egypt can be highly productive; the common image of a desert country with a thin strip of cultivable land is somewhat misleading for this reason. See Timothy Mitchell, *Rule of Experts: Egypt, Techno-Politics, Modernity* (Berkeley and Los Angeles: University of California Press, 2002), 218–21.

[6] Gilbert F. White, 'The Environmental Effects of the High Dam at Aswan', *Environment; Washington* 30, no. 7 (September 1988): 4.

[7] A barrage partially impedes the flow of a river in order to divert some of its water, as opposed to a dam which fully blocks it from bank to bank.

for some time under the British, but ultimately they would attempt the most ambitious Nile project so far: the construction of the first Aswan Dam, now sometimes referred to as the Low Dam to distinguish it from the later High Dam built under President Nasser. The first full dam on the Nile was intended to provide truly perennial irrigation in the cotton fields of northern Egypt, creating a vast crop to feed the global economy and pay off Egypt's debts. At the outset, it is important to understand that the river defines this region. In order to keep this clear throughout the text, the thesis itself follows the flow of the river.

The first case study is chapter three on Khartoum, Omdurman and Khartoum North. This urban region lies at the confluence of the Blue and White Niles, the source from which the main Nile flows north. The chapter explores the relationship between war, water and railway in constructing urban space, and also examines the importance of history-writing for imperial planners. We follow the river north for chapter four on the first Aswan Dam. Here the main topic is representation, and the ways in which confidence and anxiety were bound together in the imaginations of colonial officials. The river then carries us to the suburbs of Cairo for chapter five, where we encounter attempts to harness the power of the sun and to use the garden as a model for urban development. North of the Egyptian capital, the river spreads into the delta as the land gradually gives way to the Mediterranean Sea. Chapter six compares two cities of this region, Alexandria and Port Said, through cultural and environmental histories, to better understand how port cities embody the global and the local. Before embarking on these case studies, chapter two provides a review of the literature, while chapter seven draws together the conclusions of the thesis. This final chapter also makes a broader argument about the relationship between architectural and environmental histories.

Three themes flow through this history. They are intertwined rather than separate, and should be understood as mutually reinforcing. They are relevant to each case study site, but each has more importance in some chapters than in others.

The first is violence, the essential underpinning of colonial power. Violence is an ancient word, coming to English from Norman French and ultimately from the Latin *violentia*, which meant '(unreasonable) use of force, aggressiveness, passionateness, destructive or overwhelming force'.[8] This meaning has remained remarkably stable, and here I use the word to mean the many kinds of destructive power that might be deployed in the Nile valley, both by colonialists and others. Military conquest and the constant threat of force created and maintained empire, shaping the development of urban form and management of the environment just as it shaped other aspects of the colonial state. Achille Mbembe, drawing on work from Frantz Fanon and Michel Foucault, has argued that power over who lived and who died was the fundamental feature of empire, threaded through all its forms of governmental, social and cultural control. He terms this mode of governmentality necropolitics.[9] This was perhaps closer to the surface of politics in the Nile valley than in some other areas of empire, given the relatively short duration of British rule, the lack of a large settler community, and the regular crises that wracked the Anglo-Egyptian regime. British power over Egypt was secured with a brief but fierce campaign in 1882, while Sudan was secured by Anglo-Egyptian forces led by Lord Kitchener in a war that lasted from 1896-8. Sudan's capital region was fundamentally shaped by the military railway, and by its first generation of British rulers, military men who planned the new capital at Khartoum and set the priorities of the early British period. The threat of riot and rebellion was a central aspect of

[8] 'Violence, N.', in *OED Online* (Oxford University Press, 2014), https://www-oed-com.ezproxy.is.ed.ac.uk/view/Entry/223638.

[9] Achille Mbembe, 'Necropolitics', *Public Culture* 15, no. 1 (1 January 2003): 11–40, https://doi.org/10.1215/08992363-15-1-11; Achille Mbembe, *Necropolitics* (Durham, North Carolina: Duke University Press, 2019), http://ebookcentral.proquest.com/lib/ed/detail.action?docID=5969507; see also Frantz Fanon, *The Wretched of the Earth*, trans. Constance Farrington (New York: Grove Press, 1963).

how colonial cities were perceived by their rulers.[10] British rule was shattered by the Suez Crisis, when the empire proved unable to assert its power through sheer military force. Violence, understood as a tool of necropolitics, is an important theme in chapters three and six of this thesis: first in the importance of the invasion in defining Khartoum, and then in street violence and military bombardment in Alexandria.

The second theme is environment. This word is rather more modern, being used to mean the physical surroundings and conditions which shape a given entity's life from the mid-nineteenth century; the wider sense of 'the environment' as the general conditions of life is first found in the 1940s. Before these uses, it meant the act of surrounding something or the state of being so surrounded, so environed.[11] The cities of Sudan and Egypt are dependent on the unusual ecology of the Nile valley region, in which the fertile river banks provide the basis for life. This creates a distinctly intense form of urban development, huddled close to the river, which has persisted in one way or another for millennia. British responses to this environment shaped their urban as well as agricultural policies. The Aswan Dam, among the most impressive engineering projects of the age, was also an attempt to remake the environment into what Richard White calls, in the case of the Columbia River, an *Organic Machine*.[12] The urban settlements of Sudan and Egypt were themselves part of this machine: centres for political power, trade, military force, extraction of resources. By environment I mean the multiplicity of relationships in which life is always entangled. Not a totalising ecosystem in which every individual thing is reduced to its place within an imagined organisation, but rather an emerging

[10] For an example elsewhere in the British Empire see Prashant Kidambi, *The Making of an Indian Metropolis: Colonial Governance and Public Culture in Bombay, 1890-1920*, Historical Urban Studies Series (Aldershot: Ashgate, 2007).
[11] 'Environment, N.', in *OED Online* (Oxford University Press, 2011), https://www-oed-com.ezproxy.is.ed.ac.uk/view/Entry/63089.
[12] Richard White, *The Organic Machine: The Remaking of the Columbia River* (New York: Hill and Wang, 1995).

characteristic of multiple interrelated actants.[13] Life forms (and indeed other entities) do not relate to a static system that sets the rules or context for their existence, but rather meet and modify their environment through every interaction with other things.[14] Even the smallest organisms and chemical processes reshape the relationships around them in vital ways, and it is the sum of these interactions that we call the environment.[15] Importantly, this means that the environment is not, in itself, an actor: it is a term that describes a whole realm of actors and their relations.[16] Foundational debates within environmental history reveal tensions on this point.[17] For now it is enough to say that the environment is the totality of interactions between living and non-living things through which the habitable world is produced. This way of thinking was not available to the historical actors studied here, and so I will use older words such as landscape and wilderness when discussing their perceptions and representations of the environment.[18] This second theme is a particular focus of chapters three, four and six.

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[13] On actants see Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory*, Clarendon Lectures in Management Studies (Oxford; New York: Oxford University Press, 2005).

[14] Bruno Latour, *Facing Gaia: Eight Lectures on the New Climatic Regime*, trans. Catherine Porter (Cambridge: Polity, 2017).

[15] That this set of relationships includes all matter, not only living things, is a key argument of neomaterialism. See Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham, North Carolina: Duke University Press, 2010); and Timothy J. LeCain, *The Matter of History: How Things Create the Past*, Studies in Environment and History (Cambridge: Cambridge University Press, 2017); an alternative attempt to collapse the boundary between nature and society can be found in Noel Castree, 'Marxism and the Production of Nature', *Capital & Class*, no. 72 (Autumn 2000): 5–36.

[16] This makes it the same kind of term as 'social' is in Latour, *Reassembling the Social*.

[17] I am referring to a classic special issue of *The Journal of American History*. Donald Worster argued for an agroecological history that would put the human relationship with the land centre stage. Alfred Crosby offered an enthusiastic second, but critiques from Carolyn Merchant, Richard White and William Cronon seem to be reaching for a new way to understand how the human is entangled with nature rather than being distinct from it. Worster saw these responses as amounting to a reassertion of the significance of culture, but this is only the case if one continues to see nature and culture as distinct spheres that operate upon one another. If you collapse the binary completely then the question is transformed. See Donald Worster, 'Transformations of the Earth: Toward an Agroecological Perspective in History', 1087–1106; Alfred W. Crosby, 'An Enthusiastic Second', 1107–10; Carolyn Merchant, 'Gender and Environmental History', 1117–21; William Cronon, 'Modes of Prophecy and Production', 1122-31; Richard White, 'Environmental History, Ecology, and Meaning', 1111–16; Donald Worster, 'Seeing Beyond Culture', 1142-47; all in *The Journal of American History* 76, no. 4 (1990), https://doi.org/10.2307/2936592.

[18] Of course, landscape itself has been the focus of much analysis, especially within art history, but it is a less important term for this thesis than environment. To explore some of the many ways in which landscape has been analysed by historians over the decades, see Tim Barringer, 'Landscape Then and Now', *British Art Studies*, no. 10 (29 November 2018), https://doi.org/https://doi.org/10.17658/issn.2058-5462/issue-10/tbarringer; Monica Janowski and Tim Ingold, eds., *Imagining Landscapes: Past, Present and Future*, Anthropological Studies of Creativity and Perception (Farnham: Ashgate, 2012); Katja Grillner, 'Writing and Landscape - Setting Scenes for Critical Reflection', *The Journal of Architecture* 8, no. 2 (January 2003): 239–49, https://doi.org/10.1080/13602360309593; W. J. T. Mitchell, ed., *Landscape and Power*, Second edition

The third theme is infrastructure: in trying to control and dominate this environment, British officials drew on all the technical expertise available to them, and the region became a site for innovation and experimentation. In this the British were continuing work from the Ottoman period, notably the building of the Suez Canal and its associated new towns at Port Said and Ismailia. Just as rule of Egypt saw the development of new forms of political economy, so the urban and environmental management of the Nile valley involved technological innovation harnessed to the dominant forces of empire and capital.[19] In everyday language, infrastructure is generally used to mean the physical mechanisms through which various kinds of flow are managed: pipelines, power stations, dams, fibre-optic cables, sewers, railway lines and electricity cables are all classic examples. Beyond this, people also create legal and institutional infrastructures that enable or control movement: postal services, legal jurisdictions, international trade agreements and global corporate governance might be thought of as infrastructure in this sense.[20] And while most physical infrastructure is made by people, it should also be stressed that this is not always the case: forests, rivers and oil-fields were not created to serve an engineered network, yet they may become part of infrastructure where people have particular need for wood, water or petroleum, or to control the movement thereof.[21] Coal was sealed under the earth of Great Britain for millennia without having a role in infrastructure, before suddenly becoming vital to the industrial revolution. The construction of physical infrastructure, and the representation of this work to both colonised and colonising societies, was a

(Chicago/London: University of Chicago Press, 2002); Simon Schama, *Landscape and Memory* (London: HarperCollins, 1995); and W. G. Hoskins, *The Making of the English Landscape*, [Reissued with a new introd., first published 1955] (London: Hodder & Stoughton, 2005).

[19] For more on the importance of Egypt in the establishment of modern forms of political economy see Mitchell, *Rule of Experts*.

[20] Brian Larkin, *Signal and Noise: Media, Infrastructure, and Urban Culture in Nigeria* (Durham, North Carolina: Duke University Press, 2008), 5–6; infrastructure also penetrates into the everyday life of the city, an issue that is less important in this thesis but provocatively explored in Swati Chattopadhyay, *Unlearning the City: Infrastructure in a New Optical Field* (University of Minnesota Press, 2012).

[21] Ashley Carse, 'Nature as Infrastructure: Making and Managing the Panama Canal Watershed', *Social Studies of Science* 42, no. 4 (2012): 539–63.

central element of liberal imperialism.[22] Technical expertise was used by Europeans to project their superiority into the world even in settings that were not strictly colonies, or were ambiguous in their relationship to empire.[23] It is a misleading cliché to claim that infrastructure is always hidden: colonial and postcolonial governments have often sought to display it in order to demonstrate the benefits of their rule.[24] The making visible of infrastructure was, thus, a key part of the production of the modern technocratic state. While environment is a term for a wide field of relations, infrastructure signals an interest in particular ways in which cultural and material practices could make space.[25] This is the newest of the three keywords, first appearing in French in 1875 and then being taken into English, meaning 'the subordinate parts of an undertaking', the various substructures and foundations upon which that undertaking depends.[26] Infrastructure is especially important to chapters four and five.

Related undercurrents flow among these grander tides, intertwined with them even if they are not our major concerns. The form of British rule in Egypt and Sudan was deeply concerned with shaping character, with correcting the imagined ills of Arabic/Islamic rule in the north and educating the naïve African in the south.[27] In this discourse the White male of northern Europe was held to be the ideal figure, his strength, determination, honour and rationality contrasted with the decadent and

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[22] Larkin, *Signal and Noise*.

[23] Peter H. Christensen, *Germany and the Ottoman Railways: Art, Empire, and Infrastructure* (New Haven and London: Yale University Press, 2017).

[24] Larkin, *Signal and Noise*, 35–40; Brian Larkin, 'The Politics and Poetics of Infrastructure', *Annual Review of Anthropology* 42, no. 1 (21 October 2013): 327–43, https://doi.org/10.1146/annurev-anthro-092412-155522.

[25] Of course, infrastructure has long been of interest to architectural historians, most notably Sigfried Giedion. See his *Space, Time and Architecture: The Growth of a New Tradition* (Cambridge, Massachussetts: Harvard University Press, 1967); and *Mechanization Takes Command: A Contribution to Anonymous History* (New York: The Norton Library, 1969); on the relationship between environment and infrastructure see Emmanuel Kreike, *Environmental Infrastructure in African History*, Studies in Environment and History (Cambridge: Cambridge University Press, 2013).

[26] 'Infrastructure, N.', in *OED Online* (Oxford University Press, 1976), https://www-oed-com.ezproxy.is.ed.ac.uk/view/Entry/95624.

[27] P. J. Cain, 'Character and Imperialism: The British Financial Administration of Egypt, 1878–1914', *The Journal of Imperial and Commonwealth History* 34, no. 2 (June 2006): 177–200, https://doi.org/10.1080/03086530600633405; On Barak, 'Egyptian Times: Temporality, Personhood, and the Technopolitical Making of Modern Egypt, 1830-1930' (PhD thesis, New York University, 2009), http://search.proquest.com/openview/c0984cadb95b218d8d27871157937ddd/1?pq-origsite=gscholar&cbl=18750&diss=y; Daly, *Empire on the Nile*.

untrustworthy Arab and the ignorant African.[28] These racial stereotypes were filtered through the various different tribal, ethnic, religious and cultural groups of the Nile valley, but can be taken as informing every aspect of British rule.[29] These ideas were gendered as well as racial: Turks, Arabs, Egyptians, Nubians or Sudanese might be grudgingly admitted to possess one or two of the manly virtues – be that courage, intelligence, judgement, honour or whatever – but were considered incapable of developing the complete repertoire of excellence that was taken to be typical among the British officer class.[30] Like women, these Oriental races were claimed to be essentially lacking in some key ingredients.[31] Any potential they might have for character development was firmly in the future, and could only be realised with British guidance. Women themselves were considered less in terms of policy, but came with an equally fixed series of stereotypes in which they were generally held to be corrupting, exotic temptresses richly clothed but physically repulsive.[32] These ideas of gender, race and character will be met with again and again in the sources, and inform all of the projects that are studied here. They are woven into the fabric of this study, even if they are not its specific focus.

Technology is also embedded in any discussion of modern war, environment and infrastructure. In all of these realms specific tools and methods were utilised by

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[28] Modern thought is largely constructed on such binary contrasts, see Val Plumwood, *Feminism and the Mastery of Nature*, E-book, first edition 1993 (London; New York: Routledge, 2003); Bruno Latour, *We Have Never Been Modern*, trans. Catherine Porter (London: Prentice Hall, 1993); and Achille Mbembe, *Critique of Black Reason*, trans. Laurent Dubois (Durham, North Carolina: Duke University Press, 2017).

[29] Eve Troutt Powell, *A Different Shade of Colonialism: Egypt, Great Britain and the Mastery of Sudan* (Berkeley and Los Angeles: University of California Press, 2003).

[30] These ideas of British superiority were, of course, rooted in specific discourses and promoted by specific individuals. For a study of one example see G. A. Bremner and Jonathan Conlin, 'History as Form: Architecture and Liberal Anglican Thought in the Writings of E. A. Freeman', *Modern Intellectual History* 8, no. 2 (August 2011): 299–326, https://doi.org/10.1017/S1479244311000205; On gendered concepts in British architecture in the nineteenth century see Katherine Wheeler, *Victorian Perceptions of Renaissance Architecture* (Aldershot: Ashgate, 2014), 101–20.

[31] All of this went hand-in-hand with increasing Western knowledge of the cultures of Asia and Africa, as examined by Edward Said, *Orientalism*, Penguin Edition, first published by Routledge and K. Paul 1978 (London: Penguin, 1991).

[32] For more on representations of women in the colonial Middle East see Malek Alloula, *The Colonial Harem*, trans. Myrna Godzich and Wlad Godzich, Theory and History of Literature 21 (Minneapolis and London: University of Minnesota Press, 1986); Emily Hornby's travel journals include many accounts of the dress and physical appearance of men and women. See Emily Hornby, 'A Tour in Egypt, 1904-5', 1905, 880/10-11, Sudan Archive, University of Durham; and *A Nile Journal* (Liverpool: J. A. Thompson & Co., 1908).

colonial forces, and these technologies are central to the nature of empire itself.[33] Railways, gunboats and Maxim guns secured British power in the region, and we will repeatedly see their importance in particular decisions and modes of operation. Similarly, the Suez Canal and the Aswan Dam were themselves technologies of vital importance to global British power. The idea of technological progress was also significant in this period, and this forms an important part of the visual analysis in chapter four. The relationship between culture and technology has been heavily discussed in the scholarly literature, and it is clear that technologies do not spring unbidden from the minds of individual savants but emerge from particular social settings and networks.[34] In this thesis technology is more of a connecting idea between the three major themes than a mode of analysis in its own right. It was with and through technology that British colonialism sought to exercise power in the fields of infrastructure, environment, and matters of life and death.

In the remainder of this introduction I set out some arguments for the geographical and temporal scope of the project, introduce some of the key sources, and expand on what this thesis offers. Chapter two will place this work more firmly in the literature, before we embark on our history at the meeting point of the Blue and White Niles in chapter three.

I. Geography and period

In both the British and Egyptian imaginations at the turn of the twentieth century, Sudan was not an independent state but a peculiar part of Egypt.[35] Its decade of independence, from 1885 until Anglo-Egyptian invasion in 1896, did not alter this.

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[33] On the importance of technology in the new imperialism of the late nineteenth century see Daniel Headrick, *The Tools of Empire: Technology and European Imperialism in the Nineteenth Century* (New York: Oxford University Press, 1981); on the longer history of Europe's technological power see Daniel Headrick, *Power over Peoples: Technology, Environments, and Western Imperialism, 1400 to the Present* (Princeton: Princeton University Press, 2009).

[34] Thomas P. Hughes, *Human-Built World: How to Think about Technology and Culture*, Science.culture (Chicago/London: The University of Chicago Press, 2004).

[35] The complex layers of differentiation between Egyptian and Sudanese, and the slow shift in nationalist discourses, are traced in Troutt Powell, *A Different Shade of Colonialism*; for a more detailed account of Sudanese nationalism and the concept of Nile Valley unity see Hasan Abdin, *Early Sudanese Nationalism, 1919-1925*, Sudanese Library Series 14 (Khartoum: University of Khartoum, 1985).

Political thinkers argued that Egypt was 'only a portion of the great country of the Nile.'[36] British travellers to the Nile valley generally wrote as if it were all one country, even when trips included Sudan.[37] It was the river that was seen as the real unifying feature, creating a vast Nile country, or greater Egypt. Hydrology and hydrography were used to justify these views, although the assumption of a large 'natural' state undeniably suited British preoccupations with power and control. To acknowledge that Sudan might have its own claim on the waters of the Nile would be messy and invite complications, whereas if it were simply subservient to the claims of Egypt then the British could govern the entire vast area based on the needs of a relatively small region around the Nile delta and the Suez Canal.[38] This study examines this particular time-space: the Nile valley as governed by an Anglo-Egyptian regime that was chiefly concerned with Egypt and the wider empire.

How was this historical region constructed? It has its origins in the Egyptian conquest of the geographical area known as the Sudan during the first half of the nineteenth century. Under the dynamic rule of Muhammad Ali, who established himself as Khedive at Cairo under the distant aegis of the Ottoman Empire, Egypt expanded southwards, establishing military outposts that would become towns and garrisons. Most notable among these was Khartoum, the future capital of Sudan, at the confluence of the Blue and White Niles. Just as the British would be, Ali was keen to harness the waters of the Nile for the expansion and improvement of Egyptian agriculture. Under his rule, the first major steps towards perennial irrigation were taken, in the form of a series of barrages designed to divert – and to some extent store – the water from the annual flood. Political and military

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[36] Sidney Cornwallis Peel, *The Binding of the Nile and the New Soudan* (London: E. Arnold, 1904), 134.

[37] See, for example, Hornby, *A Nile Journal*.

[38] As Egypt gained more autonomy in the 1920s this approach began to shift to recognition that Sudan might have its own claims that should be balanced against those of its northern neighbour. This set Britain up as a power broker in the region even as its grip on Egypt loosened. See Tvedt, *The River Nile in the Age of the British*; there was a parallel change in visions of nationalism in Egypt and Sudan, see Troutt Powell, *A Different Shade of Colonialism*; Muddathir Al-Rahim, *Imperialism and Nationalism in the Sudan: A Study in Constitutional and Political Development* (London, 1969); Abdin, *Early Sudanese Nationalism, 1919-1925*.

southward expansion was tied to this interest in control of Nile water, as it would also be under the British. The further south one's territory extended, the more power one had over the use of the Nile's waters, and Egyptian rulers wished to secure as much as possible of this for the fertile earth of the delta. Subsequent khedives came under increasing influence from European creditors, and it was as protectors of European credit that Britain and France took more power in the region in the second half of the nineteenth century. Both powers were also tied into the Suez Canal project, France as the initial backers, but Britain as one of the main beneficiaries because of the new shipping route between the Mediterranean Sea and the Indian Ocean. Under Benjamin Disraeli, Britain bought up shares in the canal. With tensions between Egypt and its creditors running high, the Royal Navy fired on Alexandria in 1882, launching a short military campaign which culminated in the installation of a puppet khedive who was to do the bidding of the British consul-general. Egypt was now a de facto part of the British Empire.

In 1882, this meant that Sudan too was absorbed into the British sphere. Shortly afterwards, however, a charismatic Islamic preacher called Muhammad Ahmad emerged as the leader of a powerful rebellion in Sudan. His followers declared him the Mahdi, an Islamic saviour figure prophesised to reveal himself in the days before the last judgement. The British government under William Gladstone, uncertain of its position in Egypt and with little interest in a difficult military campaign in the vast territories of Sudan, decided not to contest the rebellion but to organise a safe retreat for Egyptian officials. General Charles Gordon, sent out to take charge of this at Khartoum, did not share this vision of Britain's role.[39] He was convinced that the Sudanese could be quelled if only those governing them would throw off the despotism inherent to their Egyptian (and also Ottoman Turkish) ways and show them justice. He therefore imagined his role in Khartoum to be to teach Egyptian

[39] For a recent history of these events and the competing visions of empire that sparked them, see Fergus Nicoll, *Gladstone, Gordon and the Sudan Wars: The Battle over Imperial Intervention in the Victorian Age* (Barnsley: Pen & Sword Military, 2013).

officials how to rule, and to demonstrate to the Sudanese the benefits of order and stability. This quixotic mission rapidly evolved into a doomed defence of the city, as the Mahdi and his army cut off the lines of retreat. Gordon held out, awaiting relief, while Gladstone and his cabinet vacillated. From 13th March 1884 to 26th January 1885, the Mahdists laid siege to Khartoum. Finally they stormed the city, and Gordon was killed. The long awaited relief forces arrived two days later, and the newspapers in Britain cried out 'too late!' The defeat at Khartoum would come to be seen as a national humiliation, and Gordon as a steadfast martyr to the cause of just, Christian imperialism.[40]

The conquest of Sudan, from 1896 to 1898, was seen by the British as revenge for the death of Gordon, and an opportunity to create a legacy worthy of his name.[41] The invasion was led by Herbert (later Lord) Kitchener and other British officers, with a predominantly Egyptian force. Years of intelligence gathering made victory much easier than it might have been had Britain sought to conquer Sudan in the 1880s. The signing of the Condominium Agreement in 1898 established a unique system of joint rule, in which the Khedive was recognised as titular ruler of Sudan, but executive government was largely in the hands of British administrators in a new Khartoum, in consultation with the consul-general in Cairo and the Foreign Office in London. Crucially, finances for the running of Sudan would largely be raised from Egypt, although the plan was for Sudan to become self-funding as soon as possible. The new regime was, at the outset, largely still led by military officials, and the need to live up to Gordon's legacy weighed heavy on their minds.

It was not until 1898, then, that a unified Nile valley was absorbed into the British Empire. I do not mean, by this, that the Nile valley was an inherently singular object that was waiting to be brought under the imperial system. Rather, it was a

[40] On this enduring myth see Max Jones, '"National Hero and Very Queer Fish": Empire, Sexuality and the British Remembrance of General Gordon, 1918–72', *Twentieth Century British History* 26, no. 2 (1 June 2015): 175–202, https://doi.org/10.1093/tcbh/hwu050.

[41] The best narrative history of the conquest and rule of Sudan remains Daly, *Empire on the Nile*.

construction of particular ways of thinking about space and time, produced by specific governmental practices. In this sense, the British Empire both produced and divided the valley, as the different regimes of Khartoum, Cairo and London each had their own approaches to governing the region, even while they shared general attitudes. This PhD is concerned with uncovering the ways in which shared visions of a united Nile valley shaped its construction as a material environment, but also how this unity was itself imagined in fragmented terms, taking some areas and issues far more seriously than others, applying varying policies in different contexts, producing a governmental strategy that was – at one and the same time – concerned with bringing the region together and with dividing it. Each of the sites studied thus sheds particular light on certain aspects of this variegated system.

Some examples will clarify this approach. The unity of the Nile valley as a political practice of British officials had two main aims: firstly, to ensure that Egypt remained politically stable by guaranteeing its economic stability; secondly, to maximise the extractable wealth produced by the entire region, as a means of securing imperial profit. Harnessing the waters of the Nile for the production of cash crops was the central aim of British hydropolitics in the region, at least until the 1920s.[42] But this broad strategy was made more complex by the differing political weight given to the various areas under British control. The Egyptian khedive (Mohammed Tewfik 1879-92, Abbas Hilmi II 1892-1914; after this the figurehead of Egypt, under the British, was a sultan, namely Hussein Kamel 1914-17, Fuad I 1917-22 when he declared himself king and ruled until his death in 1936) was both a figure to be manipulated, a puppet, and also one to be assuaged, whose ego might need to be considered. The primacy of Cairo ought not to be openly challenged. Sudanese elites, by contrast, were of little significance in the running of the region as a whole, but important to the governance of Sudan itself. The south and west of Sudan, and

[42] I am following the hydrological history laid out in Tvedt, *The River Nile in the Age of the British*; and 'Hydrology and Empire'.

the deserts of both Egypt and Sudan, could largely be left unconsidered so long as they remained stable enough not to undermine the British regime. In the huge expanse of the Nile valley, British rule was concerned primarily within a number of small areas, either urban centres of political power or productive agricultural land. Furthermore, these two categories of place both clung close to the banks of the Nile, and the rich soil fed by its waters. Governing the Nile valley therefore involved a close focus on controlling the river, while much of the rest of the country could be left to its own devices. The Anglo-Egyptian regime tended to be concentrated into a narrow channel along the riverbank, and especially focused on a handful of strategic nodes. But the British also began to construct a new, artificial network of power.

The reconquest of Sudan depended upon the rapid laying of military railways, and the new Anglo-Egyptian regime continued to expand and consolidate this infrastructural network. As with most of the British practices in the region, this was a continuation of the work of earlier Ottoman officials. Nonetheless, it is true that the British period saw extensions of the railway in Egypt and Sudan, and we will see in some of the case studies (especially chapter three on Khartoum) how this restructured the geography of individual towns as well as of the region as a whole. The point to make here is that, while power remained geographically focused on the old river network, the railway provided (at least potentially) a new geography of power for the Nile valley, with its own logic. The history examined here is of a region defined by a river, but which, exactly at this moment, was being crossed, divided and mapped in transformative new ways.

II. Main sources

Empire, engineering and architecture have all been constructed as thoroughly masculine fields, and there is no escape from the fact that most of the individuals I discuss here are White men. The ways in which imperial service, engineering and

building were developed as thoroughly gendered and racialised forms of power will be a theme throughout the text. This is only reinforced by the official archive, in which men of empire send memos, letters and policy statements back and forth to one another, with wives appearing occasionally in connection to soft-furnishings or the comforts of home. Quite rightly, scholars have sought to rebalance imperial accounts by seeking out sources that can give voice to the victims of empire, the colonised peoples themselves.[43] This process, however, has tended to imagine the main creators of empire as exactly those officials who created the archives of the imperial state, whereas if empire is imagined as a cultural project that advanced on many fronts then other imperial figures come into view.[44] Egypt and Sudan were, especially once they were drawn into the British sphere, criss-crossed by many journalists, travellers, artists and scientists who were not part of the official business of empire, but who nonetheless contributed to establishing a shared understanding of what the Nile valley was. Many lived in Alexandria and (to a lesser extent) the other major cities of northern Egypt.[45] Throughout the thesis, I draw extensively on a range of sources produced by these individuals, in order to enhance or cut across the official record. I do not base this approach simply on an assumption that all Europeans shared an imperial mission in Egypt, but on the established practices of imperial officials at the time: in Sudan in particular, any visitors with social capital were fairly likely to have an opportunity to meet the governor-general and his wife, the pinnacle of power in the region. It was important to those running Sudan that they took every opportunity to communicate their mission to other Europeans. Egypt was rather different, having a far more extensive

[43] This in turn has led to Spivak's challenge to the idea that colonised people can speak from colonial records Gayatri Chakravorty Spivak, 'Subaltern Studies: Deconstructing Historiography (1985)', in *The Spivak Reader*, ed. Donna Landry and Gerald MacLean (New York and London: Routledge, 1996).

[44] That empire is the product of a culture wider than its officer class is one of Edward Said's vital insights, most directly discussed in *Culture and Imperialism* (London: Chatto & Windus, 1993); but also a fundamental element of *Orientalism*; it is also one of the points on which MacKenzie and Said agreed, see John M. MacKenzie, *Imperialism and Popular Culture* (Manchester: Manchester University Press, 1986).

[45] Lanver Mak, 'More than Officers and Officials: Britons in Occupied Egypt, 1882–1922', *The Journal of Imperial and Commonwealth History* 39, no. 1 (March 2011): 21–46, https://doi.org/10.1080/03086534.2011.543794.

tourist trade from the outset, but the attitude was essentially similar: visitors from Britain and the West ought to understand that the role of empire in the region was bringing civilisation, and that they were a part of this too. I have selected a small group of sources to draw on throughout the thesis, to provide greater continuity between the sections. The creators of these will thus be used as witnesses of the particular sites under discussion, but also as examples of how the imperial gaze filtered what it saw of the Nile valley.

Emily Hornby travelled in Egypt and Sudan in the winters of 1904-5 and 1905-6 and left extensive journals for each trip. She had been a mountain climber in younger days and so was well-travelled, and also showed a keen interest in the ancient history of Egypt. Her encounters with officials, locals and fellow tourists along the Nile can help us understand how the area operated spatially for imperial travellers. Much of her account concerns specific ancient sites, but she also records details of new developments that can help us think about how Edwardians encountered their empire. Her voice can be found in every chapter, but is of particular importance in understanding Sudan's capital region.

Many English-speaking travellers and officials in Egypt carried a copy of Amelia B. Edwards *A Thousand Miles up the Nile* with them.[46] Western writers produced stacks of volumes on the region from the late nineteenth century on, but Edwards was held to be particularly reliable and checked her claims extensively with scholarly experts.[47] Her writing is also more engaging than Hornby's, and her popularity means that we can take her view to be directly influential in a way that is not necessarily true of all the sources cited in the thesis. She travelled in the 1870s, and so her accounts can be used to help us understand change in the region. She is

[46] Amelia B. Edwards, *A Thousand Miles Up the Nile: Fully Illustrated Second Edition*, Second Edition (New York: A. L. Burt, 1889).

[47] Nicholas Lanoie, 'Inventing Egypt for the Emerging British Travel Class: Amelia Edwards' A Thousand Miles up the Nile', *British Journal of Middle Eastern Studies* 40, no. 2 (1 April 2013): 149–61, https://doi.org/10.1080/13530194.2013.790291.

particularly important in understanding Cairo as it was experienced by the European traveller at that time.

William H. McLean was a notable figure in colonial town planning in the Middle East, first as town engineer at Khartoum and later in a variety of roles which included creating plans for Alexandria and Jerusalem. In the 1920s he studied for a PhD at Glasgow University, and in 1930 published *Regional and Town Planning, in Principle and Practice*.[48] In this, among other things, he presents his master plan for Alexandria that will be examined in chapter six. His account of Khartoum's history and planning is also important in chapter three, and we will return to his general views several times. One of the interesting features of his thought is the insistence on the importance of using multiple scales in planning. There is an interesting shift from his early work that emphasises the particularities of colonial planning to his later argument in which he draws extensive parallels between Egypt and Great Britain.

Colonial engineers and geographers produced extensive new studies of various aspects of the Nile itself during this period, and these were crucial to the management of the region. These also provide vital insight into the behaviour of the river at the time and its relationship to the environment, as understood by the colonial officials who governed the region. I cite various studies throughout the text, but two engineers are particularly important: William Garstin, who wrote a report on the Nile in Sudan, and William Willcocks, who wrote studies of the Nile as a whole and of Aswan.[49] Both were involved in the building of the first Aswan Dam. Even as the Nile shaped the region, scientists and engineers were coming to understand the river itself in new ways, and this process informed building and

[48] W. H. McLean, *Regional and Town Planning, in Principle and Practice* (London: The Technical Press ltd., 1930).

[49] William Garstin, *Report upon the Basin of the Upper Nile with Proposals for the Improvement of That River* (Cairo: National Printing Department, 1904); William Willcocks, *The Nile Reservoir Dam at Assuan and after* (London, 1901); William Willcocks, *The Nile in 1904, with Maps and Plans* (London: E. and F. N. Spon Limited, 1904).

agricultural policies. References to this new knowledge can be found in all of the chapters.

Of course, men and women occupied different places within colonial networks. Analysing these sources therefore involves considering the significance of gender in the experiences of individuals and the ways in which they produced texts.[50] The men mentioned above held official positions in the colonial regimes of the Nile valley, and much of what they wrote was intended to directly inform policy. This is true even of their writings that are not strictly official in nature, such as the histories of Khartoum analysed in chapters three. Emily Hornby and Amelia Edwards, on the other hand, were travellers on the Nile: they wrote as observers, outside the cultures of Egypt itself but also not entirely of the ruling elite either. They wrote not to shape the opinions of governors but to engage a reader who might know little of the region or the British Empire at first hand. Whereas McLean, Willcocks and Garstin were part of official networks of knowledge production and dissemination, Hornby and Edwards had to gather what they knew more through personal meetings and correspondence. This does not mean that their understanding of Egypt was somehow deficient compared with the men: as already noted, Edwards was scrupulous in her research and her expertise was respected even at the time. If she had been a man, she might well have been thought of as an Egyptologist rather than as a travel writer. Hornby was less systematic in research, relying on guides, guidebooks and individuals that she met along the way. Her writing is also less crafted than Edwards', more immediate and intimate in its daily record of events and encounters. Both writers, in different ways, give us insight into the ways in which empire was imagined in a broader

[50] Gender and empire is a wide field of research in its own right, see for example Indrani Sen, *Gendered Transactions: The White Woman in Colonial India, C. 1820-1930*, Studies in Imperialism (Manchester: Manchester University Press, 2019); Tim Allender, *Learning Femininity in Colonial India, 1820-1932*, Studies in Imperialism (Manchester: Manchester University Press, 2018); Dianne Lawrence, *Genteel Women: Empire and Domestic Material Culture, 1840-1910*, Studies in Imperialism (Manchester: Manchester University Press, 2015).

cultural sense.[51] Officials, on the other hand, provide more specific evidence of how individual projects were planned and executed. Without reading these sources, we cannot grasp how the built environment of Egypt was systematically altered. But we do not also read the likes of Hornby and Edwards, we will gain only a limited understanding of what these projects meant in colonial culture. Operating on the fringes of colonial power, both of the elite and oppressed by it, women writers can give us glimpses of a greater range of experiences and impressions than is available through the writings of colonial officials alone.

These major texts are read alongside numerous plans, images, reports, letters and other sources. These are largely drawn from UK archives, although I have also benefited from the extensive digital holdings of the American University in Cairo and the Travellers in the Middle East Archive, among others. The addition of these sources enriches the text throughout, and although online research is no substitute for archival work it has enabled me to trace evidence that would have been difficult to find in other ways within the time constraints of a PhD. I also spent valuable time walking the streets of Cairo, Alexandria and Port Said, and my analysis of these cities emerges in part from this direct experience. Chapter four is a close reading of images of the Aswan Dam, while the other chapters assemble their histories from multiple sources, reading the imperial archive as a storehouse of modes of thinking about power, the environment and urban space. The histories that emerge are imperial in the sense that they are readings of Western sources and reveal Western mindsets. Taken together, these studies give us a new understanding of the Nile valley as imagined by its rulers and of the tensions in that view. Subaltern voices are encountered occasionally, but these sources are more notable for how they obscure this possibility. This is discussed in my analysis, but it should be made clear at the outset that the history presented here is fundamentally about elites. A truly

[51] On culture in history see William H. Sewell, *Logics of History: Social Theory and Social Transformation* (Chicago/London: University of Chicago Press, 2005) chapters five and six.

subaltern history of the Nile valley would have a very different character, and I have tried to hint at how this might develop throughout the text.[52] Chapter five includes some discussion of postcolonial Cairo, drawing connections between the anti-urbanism of the garden city movement and later attempts to create a wholly new capital. Nonetheless, it remains the case that this is essentially a history of empire as created by the powerful, rather than as experienced by colonised people.

In bringing together these published and archival sources, I have also used scholarly histories to weave a broader account of empire in the Nile valley. The sites examined here have rich histories that might, in themselves provide enough material for a thesis on each, and so in bringing them together I have needed to draw judiciously on existing knowledge to bring out what they share and where they differ. This method is combined with close readings of individual sources to construct new narratives of each site. The strength of this study does not lie in discussion of all potentially relevant material, but rather in using existing understandings, combined with detailed analyses of individual sources, to produce a new understanding of how individual sites within the Nile valley related to the making of colonial space.

III. This thesis

One might ask, why this thesis? Chapter two sets out the relationship to scholarly literature in more detail, but here I want to begin to develop a broader argument for this kind of study. By bringing together violence, environment and infrastructure in a shared analysis of how power makes space, what does this thesis achieve? A sketch of these motivations at the outset will make the threads running through the

[52] Most of this was written before the publication of Jennifer L. Derr, *The Lived Nile: Environment, Disease, and Material Colonial Economy in Egypt* (Stanford, California: Stanford University Press, 2019) and this work provides a rich analysis of the everyday life of empire in the region and colonial power over the body, both issues which I have largely left to one side; see also On Barak, *On Time: Technology and Temporality in Modern Egypt* (University of California Press, 2013), https://california-universitypressscholarship-com.ezproxy.is.ed.ac.uk/view/10.1525/california/9780520276130.001.0001/upso-9780520276130.

chapters more clear, and equip us with ideas that will be more fully elaborated in the conclusion.

In Bruno Latour's introduction to Actor-Network Theory (ANT), *Reassembling the Social*, he inserts 'An Interlude in the Form of a Dialogue' in which a research student seeks a professor's advice on how to apply ANT to his project. The professor resists the idea that ANT is an approach to be applied to some raw information in such a mechanical way, repeatedly pulling the rug from under the student's feet regarding his assumptions concerning research methods. Near the start of the conversation, Latour has the professor say:

> When your informants mix up organization, hardware, psychology, and politics in one sentence, don't break it down first into neat little pots; try to follow the link they make among those elements that would have looked completely incommensurable if you had followed normal procedures.[53]

This attitude, acknowledging and working within the tangle of human thought and activity, is essential to the research presented here. The Aswan Dam, town planning, suburban Cairo and shipping ports are not thrown together simply because they happen to occur along the banks of the Nile during the same period, but because they were often presented as part of the same unifying project of empire by imperialists themselves. The connections between disparate sites and practices become interesting when we recognise the ways in which they were imagined by particular groups or organisations. It clearly follows from this that part of developing such a unified project is to present it, to give people ways of imagining it. Throughout the thesis, for this reason, sources that give an account of how a site is developed are seen as interventions in this development: they are not

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[53] Latour, *Reassembling the Social*, 141–2.; see also Bruno Latour, *An Inquiry into Modes of Existence: An Anthropology of the Moderns* (Cambridge, Massachusetts: Harvard University Press, 2013), 28–33 I am not claiming to have taken a strictly ANT approach, but simply to have taken some inspiration from the attitudes associated with that label. Readers will notice that I am fond of deploying the alternative term assemblage, which Latour himself is now more keen on than networks; see also Bennett, *Vibrant Matter*, 23–24; an explicitly Latourian analysis of the production of buildings can be found in Albena Yaneva, *The Making of a Building: A Pragmatist Approach to Architecture* (Oxford: Verlag Peter Lang, 2009) but I am less concerned with buildings as end products of a design process and more in terms of how they relate to a wider environmental field.

mere reportage, but active players in how a space is made. If one imagines Egypt and Sudan as one big Egypt, that changes the logics of how one manages that space, so that any attempt to change the spatial imaginary is as much a part of space making as are building codes, master plans and architectural drawings.

The normal procedure in architectural history, to the extent that such a thing can be claimed to exist, privileges the activities of architects, planners, building surveyors and other such specialists in making space.[54] These experts develop visual representations through drawings and other technologies that are then converted into actual buildings, or used to preserve existing ones, by workers in the various construction trades.[55] Architectural historians have become adept at connecting these experts and their buildings to broad cultural histories and to one another, so that one might study the links between architects or between architecture and other art forms. What remains is a view of buildings as products of a fairly limited and specific set of human activities. A building is something created by building. A city is a built assemblage, in which various experts manage different scales of the design process. Such, in simplified terms, is architectural history.

Urban history has tended, on the contrary, to imagine the city predominantly through the lives of people who live there, so that administrative processes, municipal boundaries, and politics become the forces most directly shaping the

[54] The distinction between architectural and urban history set out in what follows has most relevance in the context of UK approaches to academic departments and intellectual traditions, in which architecture has often been approached by scholars working in architecture or art history departments, whereas urban history has a different home in departments of history, often economic, social or cultural in approach. (An indication of this is that, at national level, architectural history is served by the Society of Architectural Historians of Great Britain, whereas urban history has the Urban History Group, a less formal sub-division of the Economic History Society, and the Centre of Urban History at the University of Leicester; similarly the UK journals of record *Architectural History* and *Urban History* have different priorities and styles of argumentation.) This is not the same in all countries. See the next chapter for a deeper discussion of intellectual trends in the history of the built environment, particularly in the study of empire.

[55] One can find this approach in, for example Mark Crinson, *Modern Architecture and the End of Empire* (Aldershot: Ashgate, 2003); G. A. Bremner, *Imperial Gothic: Religious Architecture and High Anglican Culture in the British Empire, C. 1840-70* (New Haven and London: Yale University Press, 2013); Paula Sanders, *Creating Medieval Cairo: Empire, Religion, and Architectural Preservation in Nineteenth-Century Egypt* (Cairo/New York: American University in Cairo Press, 2008); Sarah Longair, 'Scottish Architects, Imperial Identities and India's Built Environment in the Early Twentieth Century: The Careers of John Begg and George Wittet', *ABE Journal* 14 (1 July 2019), https://doi.org/10.4000/abe.5767; a good, if somewhat dated, overview of the development of architectural history can be found in David Watkin, *The Rise of Architectural History* (London: The Architectural Press, 1980).

city.[56] The planner is an important figure in both kinds of history, but the urban historian is more likely to be interested in the worker, the prostitute, the reformer, the flaneur and in general the people moving through urban spaces. Both traditions have to some extent struggled to comprehend the full complexity of the city as an assembled product of the environment, human design, spatial practices, climate, property laws, trade, manufacturing, material goods and so on and so on, but from the 1990s there have been historians attempting to pull some of these various strands together.

From this emerging tradition, described in more detail in the next chapter, I wish to mention two historians whose work has been a consistent motivation to clearer thought about the messiness of human environments. William Cronon has been a significant voice for thinking of the urban environment since the early 1990s, and his book on Chicago is among the great works on the entangled histories of cities and their hinterlands.[57] His insistence that the city and its history could not be read without understanding the way that the surrounding land is given over to fuelling urbanisation helps give us a way to think about how a region might shape the urban and vice versa. More recently, Debjani Bhattacharyya's tracing of how mapping, land ownership, and the shifting ecologies of the Bengal Delta defined Calcutta's development shows how bringing new actors into the history of a city can change our understanding of it.[58] I first encountered her use of legal histories to shed light

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[56] Examples of this kind of work include Vivian Bickford-Smith, *Ethnic Pride and Racial Prejudice in Victorian Cape Town: Group Identity and Social Practice, 1875-1902*, African Studies (Cambridge: Cambridge University Press, 1995); Garth Myers, *Verandahs of Power: Colonialism and Space in Urban Africa* (Syracuse, New York: Syracuse University Press, 2003); Kidambi, *The Making of an Indian Metropolis*; Liora Bigon and Yossi Katz, eds., *Garden Cities and Colonial Planning: Transnationality and Urban Ideas in Africa and Palestine*, Studies in Imperialism (Manchester: Manchester University Press, 2015); for an overview of the development and practice of urban history (particularly in the UK) see Shane Ewen, *What Is Urban History?* (Cambridge: Polity, 2016).

[57] William Cronon, *Nature's Metropolis: Chicago and the Great West* (New York and London: W. W. Norton & Company, 1992); William Cronon, ed., *Uncommon Ground: Rethinking the Human Place in Nature*, Paperback (New York and London: W. W. Norton, 1996); for another entangled history of an American city see Matthew Gandy, *Concrete and Clay: Reworking Nature in New York City*, Urban and Industrial Environments (Cambridge, Massachusetts: The MIT Press, 2002); for an overview of recent PhDs on urban environmental history see Stéphane Frioux, 'At a Green Crossroads: Recent Theses in Urban Environmental History in Europe and North America', *Urban History* 39, no. 3 (2012): 529–39.

[58] Debjani Bhattacharyya, *Empire and Ecology in the Bengal Delta: The Making of Calcutta*, Studies in Environment and History (Cambridge: Cambridge University Press, 2018).

on town planning at the Colonial and Postcolonial New Researchers' Network in London, in a presentation that was a great stimulus to my own thinking on water and the city. She describes her published work as a 'history of forgetting', surely a fitting banner for historians of cities as environments.[59] Much of urban planning has been taken up with making cities as unnatural as possible, by stabilising the land on which they stand, reducing their reliance on the rhythms of the environment (such as floods), filling them with artificial light, cooling or heating homes, and so on. This has also involved an imagination of the past that emphasises the human element, excluding and obscuring the environmental wherever possible. Historians such as Cronon and Bhattacharyya are helping us to recover new ways to remember the environmental past (not to mention present and future) of the city.

This thesis thus emerges from a concern to embrace the complexities around how space is made.[60] It attempts to read human environments as assemblages that involve more than human actors: the Nile shapes the cities along its banks, but the precise nature of this role in the modern era has never been investigated. Tracing the river's importance involves recognising several other actors in the creation of the Nile valley's built environment, those already described above: violence, environment (including, but not limited to, the river) and infrastructure. These broad terms are in fact labels for specific sets of actors: military officials and mapmakers; the Nile and its floods, desert dust; railways, hydrological measurement tools, dams, barrages, engineers etc. These themes are not exhaustive: other histories could have thought about how animals, disease, material goods, linguistic practices or other actants shaped development. It is not possible to write a history that is alive to every thread equally. Yet by tracing some of these threads, without

[59] Bhattacharyya, 1.

[60] There is more on space in the next chapter, but as I have already invoked the word several times I should make clear that I use it in the sense set out in Doreen B. Massey, *For Space* (London: Sage, 2005); see also Alan Lester, 'Spatial Concepts and the Historical Geographies of British Colonialism', in *Writing Imperial Histories*, ed. Andrew S. Thompson (Manchester: Manchester University Press, 2013), 118–42.

seeking to simplify or disentangle them, it is hoped to give a closer history of how empire actually worked than that achieved by focusing on only one actant at a time. In presenting my findings, I have tried to write in such a way that the ragged edges of this approach are always in view, for others to take up and develop in different ways.

Before we join the flow of the Nile in chapter three, chapter two will give a more precise account of what this thesis contributes to existing knowledge and the ways in which it builds on others' work.

Chapter 2

Literature review

This thesis both draws on and contributes to four existing areas of scholarly literature, namely: work on the imperial history of Egypt and Sudan; colonial architecture and urbanism; environmental empire; and histories of urban rivers. Each of these will be examined in turn. They are bound together by broader theoretical questions of time and space in imperial history, which will be covered directly in the final section of this chapter. Although these research areas have been addressed, in various ways, by other historians, an examination of the built environment of the Nile valley offers a previously unexploited opportunity to draw them together. What will emerge from this chapter is a clear view of the contribution of this thesis to a series of existing literatures, and its wider significance in offering a new kind of conversation between these research areas.

I. Egypt, Sudan and the Nile valley

Most of the historiography on the Nile valley deals with the emerging national histories of Egypt and Sudan, rather than treating the region as a whole. In taking the latter approach, I am following the work of Terje Tvedt on hydrology in empire.[1] Before turning to his place in the literature, however, the historiography on Egypt and Sudan in the empire should be reviewed.

The British regime in Egypt has been seen as an attempt to remodel the country for its place within a global political-economic system. Timothy Mitchell has traced the emergence of modern ideas of the national economy through practices developed in Egypt.[2] His earlier work examined how the cultural image of Egypt was packaged, displayed and appropriated in the West.[3] Both these processes involve a European

[1] Tvedt, *The River Nile in the Age of the British*; Tvedt, 'Hydrology and Empire'.
[2] Mitchell, *Rule of Experts*.
[3] Timothy Mitchell, *Colonising Egypt*, Cambridge Middle East Library (Cambridge: Cambridge University Press, 1988).

discourse that is divorced from the realities of life in Egypt. To some extent British officials, politicians, journalists and travellers could not see Egypt as it existed, because it was always obscured by their assumptions. The Egypt of discourse eclipsed the Egypt lived in by Egyptians. Processes of imperial rule involved both the creation of cultural images of Egypt and other colonised regions, and the development of expert discourses around the management of such spaces. Thus, economics, urban planning, hydrology and other such technocratic systems are bound up with an imperial understanding of the world as a place to be measured and managed.[4]

Mitchell's argument can be supported by P. J. Cain's exploration of character as an element of imperialism, and by research from a number of scholars on the creation of medieval Cairo. Cain demonstrates that British attitudes to Egyptians were based on the assumption that they were incapable of judicious government, and that the role of Britain was to change the character of the people in order to fit Egyptians for self-government.[5] There was an inherent tension between this long-term goal and short-term efforts to protect Britain's interests in the region and beyond.[6] In examining representations of Cairo as a medieval city, Paula Sanders traces the emergence of a particular type of Orientalist discourse that distanced the city from modernity by associating it with a previous historical era.[7] Various aspects of this process are also explored in a volume edited by Nezar AlSayyad, Irene Bierman and Nasser Rabbat.[8] One of the techniques of Orientalism is to deny that Eastern

[4] See also James C. Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*, Yale Agrarian Studies (New Haven and London: Yale University Press, 1998).

[5] Cain, 'Character and Imperialism'.

[6] Cain.

[7] Paula Sanders, 'The Victorian Invention of Medieval Cairo: A Case Study of Medievalism and the Construction of the East', *Middle East Studies Association Bulletin* 37, no. 2 (2003): 179–198; this view is further elaborated in *Creating Medieval Cairo* which also connects Cairo's history to wider discourses of Orientalism, and connects nineteenth century history to current heritage ideas.

[8] Nezar AlSayyad, Irene A. Bierman, and Nasser Rabbat, eds., *Making Cairo Medieval*, Transnational Perspectives on Space and Place (Lanham/Boulder/New York/Toronto/Oxford: Lexington Books, 2005).

societies are modern, to refute their right to be coeval with the West.[9] The scholarship on the making of medieval Cairo shows how this process operates in the representations of a particular city, demonstrating the symbolic importance of cities as centres of modern dynamism. This view of Western urban forms as indicative of the modern contributed to a scholarly discourse that emphasised the divided nature of colonial cities, reading them through strict contrasts between White Town and Black Town.[10] This convention has been undermined by recent urban historians: in the case of Cairo, studies of its suburbs by James Moore and Annalise DeVries have emphasised their place within a complex history of urban growth. They are rooted in Cairo's history, not imported wholesale from elsewhere. The suburb cannot be read simply as a harbinger of modernity.[11] Imperialists were not all-powerful imposers of systems, but rather struggled against other histories and discourses in trying to shape Egypt to their will.[12]

The British presence in Egypt has generally been thought of as consisting of military and civil officials, but Lanver Mak has significantly complicated this view.[13] While most British subjects in Egypt seem to have come from the British Isles, a significant proportion (c. 33% in 1897) came from Malta and a smaller number from India (c. 3%).[14] By 1917, the total number of British subjects in Egypt had decreased slightly to 17,757, of whom only 51% came from the British Isles. Some 7,761 (or nearly

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[9] Dipesh Chakrabarty, *Provincializing Europe: Postcolonial Thought and Historical Difference*, 2008 Reissue with a new preface by the author, Princeton Studies in Culture/Power/History (Princeton: Princeton University Press, 2008).

[10] A good review of recent work is Eric Lewis Beverley, 'Colonial Urbanism and South Asian Cities', *Social History* 36, no. 4 (November 2011): 482–97, https://doi.org/10.1080/03071022.2011.618286; for an example of older urban historical traditions see Janet Abu-Lughod, 'Tale of Two Cities: The Origins of Modern Cairo*', *Comparative Studies in Society and History* 7, no. 4 (July 1965): 429, https://doi.org/10.1017/S0010417500003819.

[11] James Moore, 'Making Cairo Modern? Innovation, Urban Form and the Development of Suburbia, C. 1880–1922', *Urban History* 41, no. 1 (February 2014): 81–104, https://doi.org/10.1017/S096392681300028X; Annalise J.K. DeVries, 'Utopia in the Suburbs: Cosmopolitan Society, Class Privilege, and the Making of Maʿadi Garden City in Twentieth-Century Cairo', *Journal of Social History*, 24 June 2015, 351–73, https://doi.org/10.1093/jsh/shv048.

[12] A more general discussion of these dynamics can be found in Joe Nasr and Mercedes Volait, eds., *Urbanism: Imported or Exported?* (Chichester: Wiley-Academy, 2003).

[13] Mak, 'More than Officers and Officials'; see also Lanver Mak, *The British in Egypt: Community, Crime, and Crisis, 1822-1922* (New York: I. B. Tauris, 2012).

[14] Mak provides the following figures for 1897: 12,465 British subjects from the British Isles, 6481 from Malta, and 617 from India, giving a total of some 19,563. Mak, 'More than Officers and Officials', 25.

44%) were of Maltese origin, 954 of Indian origin. The data from both censuses, when combined with figures on military and civil officials, suggests that there were several thousand British subjects in Egypt in the early twentieth century who were not there as military or government agents. Other key professions for British subjects included 'navigation, iron-metal trade, woodworking and teaching.'[15] The majority of all of these British subjects dwelt in either Alexandria or Cairo, and there seems to have been a particular concentration of civil officials in the former and military in the latter. This despite the fact that the government was mostly run from Cairo.[16] The existence of significant numbers of British subjects in each of these cities should inform our reading of the history of the spaces of Alexandria and Cairo: to what extent were these remade to suite European/British tastes? How does this compare with spatial divisions in Greater Khartoum? (Regrettably, there is no equivalent study of Sudan, but we can certainly say that the number of Europeans there was much lower.)

As Egypt emerged from within the Ottoman Empire, only to become absorbed into the British sphere, before finally moving towards independence, its sense of national identity went through a complex series of developments. In the early twentieth century nationalism and imperialism competed for ideological power.[17] W. J. Berridge's examination of these debates reveals a multi-vocal discussion, far more complex than British imperialists simply trying to defend their own power.[18] Egyptian nationalism also had a complex relationship with Sudan. The latter was seen as a natural part of a Greater Egypt, but was also culturally denigrated as

[15] Mak, 26–27.

[16] Mak, 27–29; for more on the overlapping identities at play in the communities of northern Egypt see Will Hanley, *Identifying with Nationality: Europeans, Ottomans, and Egyptians in Alexandria* (New York: Columbia University Press, 2017); and James Whidden, *Egypt: British Colony, Imperial Capital*, Paperback [first published 2017], Studies in Imperialism (Manchester: Manchester University Press, 2019).

[17] W.J. Berridge, 'Imperialist and Nationalist Voices in the Struggle for Egyptian Independence, 1919–22', *The Journal of Imperial and Commonwealth History* 42, no. 3 (27 May 2014): 420–39, https://doi.org/10.1080/03086534.2014.894699.

[18] Berridge.

backward and inferior.[19] Eve Troutt Powell has traced the emergence of – and shifts within – this discourse, as nationalists came to realise that while Egypt might be able to win its independence from Britain, the latter was increasingly unwilling to cede power in Sudan.[20] The twentieth century, especially after the First World War, witnessed the emergence of Egyptian nationalism and nationality focused on roughly the area of the modern state. The period covered by this thesis, then, coincides with the early stages of an evolution of Egyptian nationalism from a view that the Nile valley was naturally one region that should be ruled from Cairo, towards a narrower vision of Egyptian nationhood.

Egyptian historians played an active role in the creation of Egyptian nationality, as has been shown by Yoav Di-Capua and Anthony Gorman.[21] The creation of an entity called Egypt, with a particular set of boundaries, that can be traced through time, was an important step in the emerging politics of the new state. This assumption of nationality, according to Yaseen Noorani, goes beyond nationalism: it involves the acceptance by all parties of a set of discourses based on a national scale, and an entity – the nation – to which individuals ought to be willing to submit themselves.[22] The nature of this nationality was contested between royalist and republican historians from the 1920s onwards, the early decades of the twentieth century having witnessed an emerging sense of the Arab history of Egypt, alongside a repudiation of Ottoman culture.[23] The historiography of modern Egypt involves the creation of its object of study, rather as Mitchell argued economics created the economy.[24] The development of Egyptian historiography involved not only academic

[19] Troutt Powell, *A Different Shade of Colonialism*.

[20] Troutt Powell; this coincides with shifting views on Nile valley unity in Sudan, see Abdin, *Early Sudanese Nationalism, 1919-1925*.

[21] Yoav Di-Capua, *Gatekeepers of the Arab Past: Historians and History Writing in Twentieth-Century Egypt* (Berkeley/Los Angeles/London: University of California Press, 2009); Anthony Gorman, *Historians, State and Politics in Twentieth Century Egypt* (London/New York: RoutledgeCurzon, 2003).

[22] Yaseen Noorani, *Culture and Hegemony in the Colonial Middle East*, Palgrave Studies in Cultural and Intellectual History (Basingstoke: Palgrave Macmillan, 2010), 2–7; on the more general point see Benedict Anderson, *Imagined Communities: Reflections on the Origin and Spread of Nationalism* (London: Verso, 1983).

[23] Di-Capua, *Gatekeepers of the Arab Past*, especially chapter 2 'Talking History: 1906-1920', 66-90.

[24] Di-Capua, 3–4; Mitchell, *Rule of Experts*.

historians, but also writers from outside the university system. This more diverse group was, at times, less concerned with shoring up emergent political ideologies.[25] Nonetheless, the nation has remained the main unit of investigation for Egyptian historians.[26] A move toward a transnational history of the Nile valley, therefore, involves tracing previously neglected dynamics. The river binds Egypt to its region, from which national histories attempt to separate it.

The development of nationality in Sudan was also fiercely contested, and indeed still is. Writing nearly a century after the condominium agreement, Peter Woodward dubbed Sudan *The Unstable State*.[27] His study traces the fraught politics of that state through the imperial years to independence and beyond. The twenty-first century division of Sudan into two nations perhaps only goes to further demonstrate how apposite Woodward's choice of title was. Work on the political and constitutional history of Sudan goes back at least as far as Muddathir Al-Rahim's monograph in 1969, and has generally to some extent sought to explain contemporary Sudan by tracing its political development.[28] Martin Daly's detailed accounts of the condominium, over two volumes, are a key source on the personalities involved and the temporal unfolding of events.[29] Justin Willis has provided a rich analysis of the performance of British power in the rural regions of Sudan.[30] A number of PhD theses, particularly from students at Durham University, have further enhanced our understanding of the power dynamics at play in the condominium.[31] This literature

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[25] Gorman, *Historians, State and Politics in Twentieth Century Egypt* chapter 3 'History in the street: the non-academic historian', 79-111.

[26] Di-Capua, *Gatekeepers of the Arab Past*, 340–43.

[27] Peter Woodward, *Sudan, 1898-1989: The Unstable State* (London: Lester Crook, 1990).

[28] Al-Rahim, *Imperialism and Nationalism in the Sudan*; Gabriel Warburg, *The Sudan under Wingate: Administration in the Anglo-Egyptian Sudan, 1899-1916* (London: Cass, 1971); Robert O. Collins, *A History of Modern Sudan* (Cambridge: Cambridge University Press, 2008).

[29] Daly, *Empire on the Nile*; Martin W. Daly, *Imperial Sudan: The Anglo-Egyptian Condominium, 1934-56* (Cambridge: Cambridge University Press, 1991).

[30] Justin Willis, 'Tribal Gatherings: Colonial Spectacle, Native Administration and Local Government in Condominium Sudan', *Past & Present* 211 (2011): 243–68.

[31] Christopher Prior, 'Constructing Imperial Mindsets: Race and Development in Britain's Interwar African Colonial Administration' (PhD thesis, Durham University, 2007), http://etheses.dur.ac.uk/3660/; Anna Ingerith Clarkson, 'Courts,

provides a strong foundation of knowledge on the political and cultural elements of Anglo-Egyptian authority in Sudan, but has largely remained focused on these issues.

There has been little engagement with the built environment as an aspect of this network of power. Henrika Kuklick's 'Salubrious Khartoum: Building a Colonial City, 1899-1912', is largely concerned with the webs of connections between personalities rather than with the literal building of the city.[32] G. Hamdan was the first to study the functions of the various areas of Greater Khartoum, contrasting Omdurman, Khartoum and Khartoum North in terms of their morphology and development.[33] This line of investigation has been taken up by Adil Mustafa Ahmad in a series of articles on the history and contemporary state of this urban region.[34] He is explicit in blaming British policies for the partial and fragmented development of Sudan's capital region. Bushra El Tayed Babiker's working paper from 2003 compresses much of this analysis into a clear narrative of the whole of Khartoum's history, from its Egyptian origins, through the condominium and independence, to the present and possibilities for the future.[35] All of these studies share a concern with the future of the city, a tracing of development through time, and an understanding of the spatial dynamics within the city (for example through contrasts drawn between Omdurman and Khartoum). What has not been so thoroughly interrogated is the wider environmental network in which this urban

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Councils and Citizenship: Political Culture in the Gezira Scheme in Condominium Sudan' (PhD thesis, Durham University, 2005), http://etheses.dur.ac.uk/2961/; Simon Michael Mollan, 'Economic Imperialism and the Political Economy of Sudan: The Case of the Sudan Plantations Syndicate, 1899-1956' (PhD thesis, Durham University, 2008), http://etheses.dur.ac.uk/1965/; Cherry Leonardi, 'Knowing Authority : Colonial Governance and Local Community in Equatoria Province, Sudan, 1900-1956' (PhD thesis, Durham University, 2005), http://etheses.dur.ac.uk/1761/; Lazarus Leek Mawut, 'The Southern Sudan under British Rule 1898-1924 : The Constraints Reassessed.' (PhD thesis, Durham University, 1995), http://etheses.dur.ac.uk/971/; W.J. Berridge, 'Under the Shadow of the Regime: The Contradictions of Policing in Sudan, c.1924-1989' (PhD thesis, Durham University, 2011), http://etheses.dur.ac.uk/1412/.

[32] Henrika Kuklick, 'Salubrious Khartoum: Building a Colonial City, 1899-1912', *Histories of Anthropology Annual* 4, no. 1 (2008): 205–19.

[33] G. Hamdan, 'The Growth and Functional Structure of Khartoum', *Geographical Review* 50, no. 1 (January 1960): 21–40.

[34] Adil Mustafa Ahmad, 'Khartoum Blues: The "deplanning" and Decline of a Capital City', *Habitat International* 24, no. 3 (2000): 309–325; Adil Mustafa Ahmad, 'The Neighbourhoods of Khartoum: Reflections on Their Functions, Forms and Future', *Habitat International* 16, no. 4 (1992): 27–45; Adil Mustafa Ahmad, 'Housing Submarkets for the Urban Poor - the Case of Greater Khartoum, the Sudan', *Environment and Urbanization* 1, no. 2 (1989): 50–59.

[35] Bushra El Tayed Babiker, 'Khartoum: Past, Present and the Prospects for the Future' (Durham Research Online, 2003), http://dro.dur.ac.uk/89/.

region sits, or its ties to Anglo-Egyptian power in Sudan and the region. The above works are also largely concerned with urban, rather than architectural, scales of analysis. One of the contributions of this thesis will be to address some of these limitations in the literature on Greater Khartoum (see chapter three).

There is rather more work on the built environment in Egypt. There has been a strong focus on the modernity, or otherwise, of Cairo in particular.[36] The ways in which the city and its districts were produced and managed to present particular visions of the nation and its history have provided rich material for analysis. The relationship between engineering and architecture has also begun to be explored by Mercedes Volait.[37] The importance of cleanliness in the development of Alexandria is the focus of a stimulating article by On Barak.[38] That city is also the focus of an extensive literature on cosmopolitanism and cultural encounter, at times reflecting the ideas of the many communities that left Alexandria during the twentieth century as nationalists increasingly imposed Arabic and removed the legal privileges once held by 'foreign' groups.[39] All of these studies deal with Egypt alone, or some specific site within Egypt. No previous research has focused on the relationship between building in Egypt and in Sudan.

Indeed, most of the authors above treat Egypt and Sudan as separate entities, although Daly has written on both nations and Troutt Powell's work does cross the

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[36] Sanders, 'The Victorian Invention of Medieval Cairo'; and *Creating Medieval Cairo*; AlSayyad, Bierman, and Rabbat, *Making Cairo Medieval*; Moore, 'Making Cairo Modern?'; DeVries, 'Utopia in the Suburbs'; Mercedes Volait, 'Making Cairo Modern (1870-1950): Multiple Models for a "European-Style" Urbanism', in *Urbanism: Imported or Exported?*, ed. Joe Nasr and Mercedes Volait (Chichester: Wiley-Academy, 2003), 17–50.

[37] Mercedes Volait, *Le Caire - Alexandrie Architectures Européennes, 1850-1950*, 2nd edition (Cairo: Centre d'études et de documentation économique, juridique et sociale, Institut francais d'archéologie orientale, 2004); for a wider consideration of the global flows of urban planning see Nasr and Volait, *Urbanism: Imported or Exported?*

[38] On Barak, 'Scraping the Surface: The Techno-Politics of Modern Streets in Turn-of-Twentieth-Century Alexandria', *Mediterranean Historical Review* 24, no. 2 (2009): 187–205.

[39] Veronica Della Dora, 'The Rhetoric of Nostalgia: Postcolonial Alexandria between Uncanny Memories and Global Geographies', *Cultural Geographies* 13, no. 2 (1 April 2006): 207–38, https://doi.org/10.1191/1474474006eu357oa; David Dunn, 'Imagining Alexandria: Sightseeing in a City of the Mind', *Journal of Tourism and Cultural Change* 4, no. 2 (1 September 2006): 96–115, https://doi.org/10.2167/jtcc067.0; Valeska Huber, *Channelling Mobilities: Migration and Globalisation in the Suez Canal Region and Beyond, 1869-1914* (Cambridge: Cambridge University Press, 2013).

boundary without necessarily seeking to undermine it.[40] By contrast, and drawing on questions from environmental and international history, Tvedt has set out an interpretation of British policy in Egypt and Sudan that sees it as centred on the management of the River Nile.[41] He develops this into a mode of interpreting British policy well into the post-WWII period, and fundamental to reading British attitudes to African partition in the late nineteenth century.[42] While the former point might not be without controversy, the importance of the Nile in Victorian and Edwardian policy to Egypt and Sudan is well attested in the sources, and can also be mapped against the history of Egyptian nationalism outlined by Troutt Powell. More recently, Jennifer Derr has written of the lived experience of empire in the Nile valley.[43] In short, in the early history of the condominium both British administrators and Egyptian nationalists were in favour of managing the Sudan essentially to the benefit of Egypt. The divergence of these positions begins in this period itself, but was not firmly established before moves toward Egyptian independence gathered pace in the 1920s. This thesis deals with a period of Nile valley history in which many in Egypt and Britain viewed the region as a whole, run for one purpose, rather than as two separate nations or as a divided region with contested hydrological needs. The extent to which this policy can be traced in urban development is one of the major questions driving this research.

II. Imperial architecture and urbanism

The cities created or expanded under European empires are among their most obvious and lasting legacies. Scholars have long tried to understand their urban form, architecture, economics and dynamics of power.[44] This thesis builds on this

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[40] Troutt Powell, *A Different Shade of Colonialism*; Daly, *Cambridge History of Egypt*.

[41] Tvedt, *The River Nile in the Age of the British*.

[42] Tvedt; Tvedt, 'Hydrology and Empire'.

[43] Derr, *The Lived Nile*.

[44] For example Abu-Lughod, 'Tale of Two Cities'; William Cunningham Bissell, *Urban Design, Chaos, and Colonial Power in Zanzibar* (Bloomington & Indianapolis: Indiana University Press, 2010); Myers, *Verandahs of Power*; Anthony D. King, *The Bungalow: The Production of a Global Culture* (London: Routledge & Kegan Paul, 1984); Bremner, *Imperial Gothic*; Mark Crinson,

literature while contributing a concern with environmental elements of urban history, and examining case studies that have not been worked on before.

The recent release of a volume on *Architecture and urbanism in the British Empire* as part of the Oxford history of the British Empire companion series signals the development of a conversation between imperial historians, on the one hand, and architectural and urban historians on the other.[45] With chapters arranged both thematically and by region, the book covers an impressive geographical and temporal range. The themes are reflective of general trends in the historiography of the imperial built environment. Architectural historians have drawn the imperial 'periphery' into previously Western-centric histories of Modernism.[46] Urban historians have blurred the differences between the colonial city and other urban assemblages along with old binaries of White Town and Black Town.[47] William Cunningham Bissell has shown the importance of planning as a technique of power, even when it failed in its stated objectives.[48] The thematic chapters in *Architecture and urbanism* cover early colonial architecture, urban planning, monuments and memorials, imperialism in the buildings and landscape of Britain, religion and education, and imperial modernism.[49] Egypt is covered along with Palestine and Iraq in a chapter by Samuel Albert.[50] This connects it to Middle Eastern rather than

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Empire Building: Victorian Architecture and Orientalism (London: Routledge, 1996); Rajnarayan Chandavarkar, *The Origins of Industrial Capitalism in India: Business Strategies and the Working Classes in Bombay, 1900-1940*, Cambridge South Asian Studies (Cambridge: Cambridge University Press, 1994); Kidambi, *The Making of an Indian Metropolis*.

[45] G. A. Bremner, ed., *Architecture and Urbanism in the British Empire*, The Oxford History of the British Empire Companion Series (Oxford: Oxford University Press, 2016).

[46] Crinson, *Modern Architecture and the End of Empire*.

[47] Beverley, 'Colonial Urbanism and South Asian Cities'; see also William Cunningham Bissell, 'Between Fixity and Fantasy: Assessing the Spatial Impact of Colonial Urban Dualism', *Journal of Urban History* 37, no. 2 (2011): 208–29 for a discussion of the relationship between urban history and postcolonial approaches to cities.

[48] Bissell, *Urban Design, Chaos, and Colonial Power in Zanzibar*; William Cunningham Bissell, 'Conservation and the Colonial Past: Urban Planning, Space, and Power in Zanzibar', in *Africa's Urban Past*, ed. David Anderson and Richard Rathbone (Oxford: James Currey, 2000).

[49] Daniel Maudlin, 'Beginnings: Early Colonial Architecture', 19–50; Robert Home and Anthony D. King, 'Urbanism and Master Planning: Configuring the Colonial City', 51–85; G. A. Bremner, 'Stones of Empire: Monuments, Memorials and Manifest Authority', 86–124; G. A. Bremner, 'The Metropolis: Imperial Buildings and Landscapes in Britain', 125–58; G. A. Bremner and Louis P. Nelson, 'Propagating Ideas and Institutions: Religious and Educational Architecture', 159–97; Mark Crinson, 'Imperial Modernism', 198–236; all in *Architecture and Urbanism in the British Empire*.

[50] Samuel Albert, 'Egypt and Mandatory Palestine and Iraq', in *Architecture and Urbanism in the British Empire*.

African history, and cuts it off from Nile valley history. This thesis, while not disputing Egyptian ties to the Middle East, reasserts the importance of understanding the Nile valley as one region in order to read the British imperial buildings of Egypt and Sudan.

A thread from urban history that has yet to be fully taken up is the concern with environmental history. In 1996, David Harvey declared that 'in a fundamental sense, there is nothing *unnatural* about New York city' [emphasis original].[51] This understanding of cities, as environmental assemblages rather than artificial creations, can be found embedded in work as diverse as Matthew Gandy's study of New York and Peter Borsay's examination of the relationship between town and countryside in England.[52] Stephane Frioux has provided a useful overview of recent theses, which is notable not only for the range of studies cited but for the fact that most of these examples come from North America.[53] This literature also relates to the section on urban river literature below. Among the early pioneers of combining urban and environmental histories was William Cronon, whose history of Chicago and the American West binds the development of the city to networks of rail, water, commodities and ideas.[54] Debjani Bhattacharyya has uncovered the ways in which the haphazard early mapping of the Bengal Delta enabled the construction of colonial Calcutta.[55] This conception of city and environment as essentially features of a shared process of placemaking informs my reading of Nile valley history as an assemblage of urban, hydrological and agricultural networks.

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[51] David Harvey, *Justice, Nature and the Geography of Difference* (Oxford: Blackwell, 1996), 186.

[52] Gandy, *Concrete and Clay*; Peter Borsay, 'Nature, the Past and the English Town: A Counter-Cultural History', *Urban History* 44, no. 1 (February 2017): 27–43, https://doi.org/10.1017/S096392681500098X; see also Matthew Gandy, *The Fabric of Space: Water, Modernity, and the Urban Imagination* (Cambridge, Massachusetts: The MIT Press, 2014); there is a useful overview of recent urban environmental history in chapter 3 of LeCain, *The Matter of History*.

[53] Frioux, 'At a Green Crossroads'.

[54] Cronon, *Nature's Metropolis*; for a review of how historians have at times blurred and at times reinforced the nature/city dichotomy see Martin V. Melosi, 'Humans, Cities, and Nature: How Do Cities Fit in the Material World?', *Journal of Urban History* 36, no. 1 (1 January 2010): 3–21, https://doi.org/10.1177/0096144209349876.

[55] Bhattacharyya, *Empire and Ecology in the Bengal Delta*.

Urban history has recently been turning to more global approaches, and this often involves thinking through colonial or imperial cities.[56] The conference The Pursuit of Global Urban History: A Dialogue Between Two Fields, held at the University of Leicester in July 2019, drew some of these strands together.[57] Panel topics included the British Empire in Asia, trans-imperial approaches, anti-imperialism and the city, global travellers and urban space, a Zimbabwean township from the 1950s to the 2010s, peripheral imperialism in Asia and Africa, and one that I organised on African urban space. There were many others that also touched on colonial, imperial and postcolonial histories. In his keynote, Sunil Amrith called for more sophisticated thinking about cities within the environment, how all urban developments are essentially embedded in environmental processes rather than being separate from these. This chimes with emerging literature on the concept of planetary urbanisation, which was also discussed in a masterclass at the conference. (I did not attend this session, so what follows is based on my reading of the literature rather than the discussions at the event.) This idea, promoted by Neil Brenner and Christian Schmid, builds on earlier thinking by Henri Lefebvre to argue that there is no longer any part of the earth that is not in some way shaped by processes of urbanisation.[58] This should not be confused with arguing that the whole planet is

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[56] Or moving across such categories, as in Carl Nightingale, *Segregation: A Global History of Divided Cities* (Chicago/London: University of Chicago Press, 2012); architectural history moved toward the global somewhat earlier, see for example Crinson, *Modern Architecture and the End of Empire*; this can be connected to efforts to provide student architects with a more geographically wide-ranging history of buildings in books such as Marian Moffett, Michael Fazio, and Lawrence Wodehouse, *A World History of Architecture* (London: Laurence King, 2003); and Kathleen James-Chakraborty, *Architecture since 1400* (Minneapolis: University of Minnesota Press, 2014); for recent discussions of the global in architectural history see Sarah Longair, 'Visions of the Global: The Classical and the Eclectic in Colonial East African Architecture', *Les Cahiers d'Afrique de l'Est / The East African Review*, no. 51 (1 March 2016): 161–78; and Swati Chattopadhyay, 'The Globality of Architectural History', *Journal of the Society of Architectural Historians* 74, no. 4 (1 December 2015): 411–15, https://doi.org/10.1525/jsah.2015.74.4.411.

[57] Of course, this is not the first generation to think about global connections. For an overview of earlier works, with a focus on the Middle East, see Zeynep Çelik, 'New Approaches to the "Non-Western" City', *Journal of the Society of Architectural Historians* 58, no. 3 (1999): 374–81, https://doi.org/10.2307/991531 but the self-conscious gathering together as global urban historians is a recent development.

[58] The most thorough testing and discussion of the concept is in a 2018 special issue, see Neil Brenner, 'Debating Planetary Urbanization: For an Engaged Pluralism', 570–90; Christian Schmid, 'Journeys through Planetary Urbanization: Decentering Perspectives on the Urban', 591–610; perhaps the most sophisticated responses are Kanishka Goonewardena, 'Planetary Urbanization and Totality', 456–73; Natalie Oswin, 'Planetary Urbanization: A View from Outside', 540–46; Linda Peake et al., 'Placing Planetary Urbanization in Other Fields of Vision', 374–86; Geraldine Pratt, 'One Hand Clapping: Notes towards a

urban, or a city, but is specifically concerned with placing urbanisation as a process in its relationship with places that are usually thought of as unconnected from it. It is perhaps debateable whether this represents a new insight, or is a somewhat different mode of discussing arguments already raised by Cronon and other urban environmental historians.[59] One might also wonder if proposing that urbanisation has now, in the early decades of the twenty-first century, extended its influence across the surface of the planet in effect reinforces a conceptual distinction between the city and nature that may itself be the root of the problem that Brenner and Schmid are trying to solve.[60] Planetary urbanisation emerges from urban studies rather than history, and so operates within a somewhat different research paradigm, perhaps more concerned with generalisability and policy implications. In any case, the clear similarities suggest a shared realisation that the urban must be understood as part of a network of environmental relationships, even if the various approaches to this issue use different methods and terms. This might encourage us to think back to much earlier work on the nature of cities: as well as Lefebvre, one could consider Lewis Mumford's thinking on the relationship between city and region.[61] The question of how the global and the urban interact has returned scholars to issues surrounding the construction of regions, which we will also encounter in the coming chapters.

The strengths of current research on the imperial built environment can be summed up as a rich understanding of the multiple human agencies at play in

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Methodology for Debating Planetary Urbanization', 563–69; and Rajyashree N Reddy, 'The Urban under Erasure: Towards a Postcolonial Critique of Planetary Urbanization', 529-39; all in *Environment and Planning D: Society and Space* 36, no. 3 (1 June 2018), https://doi.org/10.1177/0263775817744220.

[59] White, *The Organic Machine* would seem an especially relevant example; Brenner and Schmid's focus on process is also in sympathy with Gandy, *The Fabric of Space*; Chattopadhyay, *Unlearning the City* also considers the dissolving distinctions between city, town and countryside, see chapter 3.

[60] Consider the arguments in Melosi, 'Humans, Cities, and Nature'; and LeCain, *The Matter of History* especially chapters 1 and 3.

[61] Aaron Sachs, 'Lewis Mumford's Urbanism and the Problem of Environmental Modernity', *Environmental History* 21, no. 4 (1 October 2016): 638–59, https://doi.org/10.1093/envhis/emw034; Sachs is especially interested in Mumford's 1930s works, notably Lewis Mumford, *The Culture of Cities*, 1970 edition, first published 1938 (New York: Harcourt Brace Jovanovich, 1970); and *Technics and Civilization* (New York: Harcourt, Brace and Company, 1934).

constructing urban space. This includes reading cultural dynamics, political struggles, accounts from officials, travellers, subaltern and colonised groups, and so on. What is lacking is an inclusion of non-human actors in accounts of the construction of urban space, in spite of the importance given to climate, disease etc. in imperial accounts of urbanity. The inclusion of urban environments in William Beinart and Lotte Hughes *Environment and Empire* shows the potential of this approach, but it has yet to be extensively pursued.[62] This thesis will demonstrate the value of analysing non-human as well as human actors in understanding the history of imperial and colonial cities.

III. Environmental empire

This is not to suggest that environmental or ecological concerns have not been reflected in histories of empire. Alfred Crosby's *Ecological Imperialism* presented European colonisers as creators of 'neo-Europes', spreading the flora and fauna of their continent across the temperate corners of the globe.[63] According to his reading of the evidence, the victory of European imperialists over the indigenous peoples of the Americas and Australasia depended on certain biological and ecological, rather than only technological or military, advantages.[64] These included: carrying Eurasian diseases to isolated communities, creating fierce epidemics; introducing new crops and domesticated animals, radically altering the ecological context in which people had previously lived to something more similar to Europe; extracting existing resources such as wood; and using horses to great military advantage, against people who had never seen mounted humans. In contrast to the

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[62] William Beinart and Lotte Hughes, *Environment and Empire*, Oxford History of the British Empire Companion Series (Oxford: Oxford University Press, 2007) chapter 9 'Colonial Cities: Environment, Space, and Race', 148-166, and chapter 18 'The Post-Imperial Urban Environment', 310-328; the importance of things and materiality to understanding the history of buildings has also been emphasised in Prita Meier, *Swahili Port Cities: The Architecture of Elsewhere* (Bloomington & Indianapolis: Indiana University Press, 2016), 5–7.

[63] Alfred W. Crosby, *Ecological Imperialism: The Biological Expansion of Europe, 900-1900*, Canto, Studies in Environment and History (Cambridge: Cambridge University Press, 1993).

[64] A version of this analysis was popularised in Jared Diamond, *Guns, Germs and Steel: A Short History of Everybody for the Last 13,000 Years* (London: Vintage, 1998).

neo-Europes of interest to Crosby, North Africa was not ecologically or culturally isolated from Eurasian diseases or technologies, and in his model this explains why colonisation took place much later. Europeans had to gain new advantages based on the wealth of their neo-Europes before conquering extensive African or Asian territories.

Crosby's account of imperialist expansion is not without its problems. He sees empire as fundamentally expansive, a process best understood as a European growth, both political and ecological. Indigenous societies are presented as stuck in the stone age, unable to resist the spread of more technologically advanced societies. Each confrontation between the two is read as a meeting of representatives of different eras of human development.[65] Europeans may be unwitting ecological imperialists, but they are nonetheless always more advanced than those they encounter. More recent histories have undermined this view, revealing the complex flows and cross-currents that generated empires. Spatial aspects of this analysis will be covered in more detail below, but some works on global environment and ecologies will demonstrate relevant issues.

European knowledge often floundered in contact with unfamiliar places, life-forms, and products. Edward Melillo's global history of silk, shellac and cochineal reveals processes by which indigenous knowledge became key to global economic flows.[66] While it might be Europeans manipulating and benefitting from imperial trade networks, the products that were transported were often mysterious to them. Meanwhile, European scientists were often concerned with importing new species

[65] Again, denial of coevalness to colonised people is central to the assertion of European exceptionalism. See Chakrabarty, *Provincializing Europe*.

[66] Edward D. Melillo, 'Global Entomologies: Insects, Empires, and the "Synthetic Age" in World History', *Past & Present* 223, no. 1 (1 May 2014): 233–70, https://doi.org/10.1093/pastj/gtt026.

to Europe, not simply expanding their own environment.[67] To read empire as a process of globalising Europe misses this kind of dynamic.

James Beattie has shown that positive visions of Western mastery of nature were bound-up with anxieties around ecological degradation, disease, and the ugliness of new imperial environments.[68] Even within the high imperialist ideology of the nineteenth century lurked a suspicion of unintended consequences. Beattie quotes C. R. Markham in 1866:

> Human action has produced great changes in the physical condition of the earth's surface. Vast tracts of swampy wilderness have been converted in fresh pastures or cultivated fields, and barren uplands have been covered with stately trees. On the other hand, many regions, in all parts of the world, which were once clothed with verdure are now treeless and arid wastes. All these changes are the work of man … the best methods of counteracting evils which may be caused by these extensive clearances is one of the most important questions that occupy the attention of physical geographers.[69]

These lines clearly demonstrate the extent to which ecological triumphalism and anxiety were mutually constructed, two sides of the same coin. Ranajit Guha and John MacKenzie have both argued that anxiety was characteristic of the imperial situation for those who were theoretically in control.[70] In seeking to understand how British officials in the Nile valley sought to manipulate and respond to the environment, this complex intermingling of confidence and anxiety needs to be born clearly in mind. Even as they sought to master the river imperialists doubted their ability to do so permanently, which only drove them to greater efforts to tame the landscape. The aesthetic element of Beattie's argument is particularly important for the present study, as it suggests one way of understanding urban

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[67] Sverker Sörlin, 'Ordering the World for Europe: Science as Intelligence and Information as Seen from the Northern Periphery', in *Nature and Empire: Science and the Colonial Enterprise*, ed. Roy MacLeod, Osiris (Chicago: University of Chicago Press, 2000).

[68] James Beattie, *Empire and Environmental Anxiety: Health, Science, Art and Conservation in South Asia and Australia, 1800-1920*, Cambridge Imperial and Post-Colonial Studies (Basingstoke: Palgrave Macmillan, 2011).

[69] Beattie, 4.

[70] Ranajit Guha, 'Not at Home in Empire', *Critical Inquiry* 23, no. 3 (1997): 482–493; John M. MacKenzie, *Empires of Nature and the Nature of Empires: Imperialism, Scotland and the Environment* (East Lothian: Tuckwell Press, 1997), 42–50.

planning in an imperial context. How was urban planning used to project aesthetic ideals? Was the environment reshaped to appeal to imperial eyes?[71] The extent to which the sites under discussion reveal environmental anxieties in their design will be shown in each chapter. This, in turn, will shed new light on the relationship between imperial ecological ideologies and the built environment.

IV. Urban rivers

In reading the Nile as a protagonist in the creation of urban space, this thesis builds on emerging trends of blue history, crossing the boundaries of urban, maritime and environmental histories. A special issue of the *American Historical Review* in 2006 noted that 'Maritime scholarship seems to have burst its bounds'.[72] Around the same time, Isaac Land called for more focus on the specifics of coastal histories, which is important in chapter six on Alexandria and Port Said.[73] In 2009, the launch of *Water History* provided further evidence of historians' increasing engagement with water.[74] In 2010 Tricia Cusack traced the importance of rivers in the construction of national identity.[75] The 2012 collection *Urban Rivers* covers a range of case studies across North America and Europe, covering issues of water ownership, urban morphology, industrial development, and relationships between cities and their regions.[76] This clearly links to issues raised by Tvedt's interpretation

[71] These questions also show how difficult it is to separate cultural and material histories. One proposed solution is the eco-cultural network, an idea that may prove useful but which I have not sought to thoroughly test in this thesis. See: James Beattie, Edward Melillo, and Emily O'Gorman, eds., *Eco-Cultural Networks and the British Empire: New Views on Environmental History* (London/New York: Bloomsbury Academic, 2015), https://www.dawsonera.com/abstract/9781441108678; James Beattie, Edward Melillo, and Emily O'Gorman, 'Rethinking the British Empire through Eco-Cultural Networks: Materialist-Cultural Environmental History, Relational Connections and Agency', *Environment and History* 20, no. 4 (1 November 2014): 561–75, https://doi.org/10.3197/096734014X14091313617406.

[72] Kären Wigen, 'Introduction: Oceans of History', *The American Historical Review* 111, no. 3 (2006): 717–721.

[73] Isaac Land, 'Review Essay: Tidal Waves: The New Coastal History', ed. N. A. M. Rodger et al., *Journal of Social History* 40, no. 3 (2007): 731–43; see also David Worthington, ed., *The New Coastal History: Cultural and Environmental Perspectives from Scotland and beyond* (Cham: Springer International Publishing, 2017), http://link.springer.com/10.1007/978-3-319-64090-7.

[74] Johann Tempelhoff et al., 'Where Has the Water Come From?: Editorial "Water History"', *Water History* 1, no. 1 (July 2009): 1–8, https://doi.org/10.1007/s12685-009-0003-6.

[75] Tricia Cusack, *Riverscapes and National Identities*, Space, Place, and Society (Syracuse, New York: Syracuse University Press, 2010).

[76] Stephane Castonguay and Matthew D. Evenden, eds., *Urban Rivers: Remaking Rivers, Cities, and Space in Europe and North America* (Pittsburgh, PA: University of Pittsburgh Press, 2012).

of British policy and the Nile Valley, and to some of the literature on Khartoum cited above.

These studies are not without their problems, however. Mitchell has shown the processes by which Western experts created their areas of expertise partly through discourses developed in imperial settings.[77] This should prompt a critical reading of expert texts as products of ideology, rather than neutral statements of scientific facts.[78] Yet, in writing environmental histories of the West, scholars at times reproduce the assumptions of particular scientific communities rather than drawing them into critical view. In Christopher Smout's chapter on river pollution in the Firth of Forth, he traces the development of ideas and technologies that enabled the cleaning of rivers.[79] But he does not thoroughly interrogate the nature of this aim; his work reveals tensions about whether, and how, rivers should be cleaned, but this is revealed only in order to explain why it did not happen earlier. The desirability of clean rivers, and the specific connotations of the word clean applied in this context, are not questioned. The reader is assumed to be in sympathy with the aim of clean rivers, and the historian carries the task of explaining why people in the past were slow to develop ideas and practices that could rid the waters of the firth of unwanted pollution. The present is here assumed to be a more enlightened place than the past, itself presented as a foreign land in which strange and dangerous attitudes toward the environment are common. The 'enormous condescension of posterity', repudiated by E. P. Thompson fifty years ago, is still to be found in some environmental histories.[80] MacKenzie labels this tendency a 'neo-Whiggish' response to more catastrophist

[77] Mitchell, *Rule of Experts*.

[78] Latour, *Reassembling the Social*.

[79] T. Christopher Smout, 'Urbanization, Industrialization, and the Firth of Forth', in *Urban Rivers: Remaking Rivers, Cities, and Space in Europe and North America*, ed. Stephane Castonguay and Matthew D. Evenden (Pittsburgh, PA: University of Pittsburgh Press, 2012).

[80] E. P. Thompson, *The Making of the English Working Class* (New York: Pantheon Books, 1964).

readings of environmental history.[81] This is not to claim that clean rivers are undesirable, but to insist that the role of the historian is to trace the networks that produce social constructions, not to take one outcome as given and then question why it did not emerge earlier. The scholar has a duty to the actors being studied, and ought not to grant herself additional knowledge over them.[82]

This is not to say that all river historians have presented naïvely positivist readings of technocratic river management. In his work on the upper Mississippi, Philip Scarpino identifies the 1890s as the period when damage done to river environments was first identified.[83] From this starting point he goes on to explore the contested nature and unintended consequences of river management, noting that:

> Severe pollution of the upper river represented the combined consequences of two single-purpose technologies: sewers developed to eliminate local accumulations of waste, and locks and dams designed to improve navigation.[84]

Rivers have a way of transforming local into regional problems, and, as Theodore Steinberg has pointed out, of resisting attempts to pin ownership on them.[85] As Richard White has shown in the case of the Columbia, work is central to human experience of rivers.[86] Harvesting energy from them in the form of food or electric current, diverting their flows to feed crops, these are not simply processes that are applied to rivers, but a fundamental part of how we understand and relate to them. The recent emergence of the Anthropocene, the proposed new geological epoch corresponding to increased human influence on Earth's geology, has stimulated historians of rivers to produce a volume called *Rivers of the Anthropocene*, which

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[81] MacKenzie, *Empires of Nature*, 17–19.

[82] Latour, *Reassembling the Social*.

[83] Philip V. Scarpino, *Great River: An Environmental History of the Upper Mississippi, 1890-1950* (Columbia: University of Missouri Press, 1985), 7.

[84] Scarpino, 177.

[85] Scarpino, 191; Theodore Steinberg, *Nature Incorporated: Industrialization and the Waters of New England*, Studies in Environment and History (Cambridge: Cambridge University Press, 1991), 14.

[86] White, *The Organic Machine*.

expands on many of the themes identified above.[87] The length of the Nile means that it raises these questions on a grand scale, crossing national, imperial and geographical boundaries on its journey from sub-Saharan Africa to the Mediterranean. Although not a river history in quite the same mode as those by Scarpino, Steinberg or White, this thesis nonetheless builds on and continues their efforts to uncover how humans relate to rivers.

The postcolonial turn has also prompted a new kind of engagement with water in history and political economy. Charisma Acey, Anna Bohman and Kate Showers have all contributed articles to *Water History* that move across the boundaries between colonial and postcolonial histories in following the development of water policies.[88] Harry Verhoeven has put water at the heart of his analysis of political economy in independent Sudan.[89] A volume edited by Amita Baviskar explores the cultural politics of water across a range of primarily Indian case studies.[90] Showers' study of the Congo has particular relevance to the current study for her observation that the idea of African rivers as links to untold wealth has a long history, which remains embedded in later visions of electrical power flow from dams.[91] Acey and Bohman's studies reveal how patterns of contested water rights that have their origins in colonial policy have continued to shape postcolonial governmentality.[92] This study thus also draws on an emerging field of postcolonial research into water histories.

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[87] Jason M. Kelly et al., eds., *Rivers of the Anthropocene* (Oakland, California: University of California Press, 2018), https://www.luminosoa.org/site/books/10.1525/luminos.43/.

[88] Charisma Acey, 'Forbidden Waters: Colonial Intervention and the Evolution of Water Supply in Benin City, Nigeria', *Water History* 4, no. 3 (December 2012): 215–29, https://doi.org/10.1007/s12685-012-0061-z; Anna Bohman, 'The Presence of the Past: A Retrospective View of the Politics of Urban Water Management in Accra, Ghana', *Water History* 4, no. 2 (July 2012): 137–54, https://doi.org/10.1007/s12685-011-0047-2; Kate B. Showers, 'Congo River's Grand Inga Hydroelectricity Scheme: Linking Environmental History, Policy and Impact', *Water History* 1, no. 1 (July 2009): 31–58, https://doi.org/10.1007/s12685-009-0001-8.

[89] Harry Verhoeven, *Water, Civilisation and Power in Sudan: The Political Economy of Military-Islamist State Building*, African Studies (New York: Cambridge University Press, 2015).

[90] Amita Baviskar, ed., *Waterscapes: The Cultural Politics of a Natural Resource*, Nature, Culture, Conservation Series (New Delhi: Permanent Black, 2007).

[91] Showers, 'Congo River's Grand Inga Hydroelectricity Scheme'.

[92] Acey, 'Forbidden Waters'; Bohman, 'The Presence of the Past'.

The tensions between expert opinion and what might be considered socially beneficial are thrown into stark contrast in imperial settings. Dipesh Chakrabarty has argued that even as global histories have decentred our understanding of the production of history, in the world of theory an imagined Europe still holds authority.[93] Historians of the West do not feel it necessary to read histories of other regions, whereas historians working on the East or the Global South still often look to methods and terminology developed in the study of Western history. The case of the tangled history of rivers and urbanism, explored in this thesis, is an example of how theorising from the South can shift our understandings of environmental histories. The characters – engineers, surveyors, hydrologists, planners – who appear in some Western histories as the early heroes of environmentalism are, in imperial histories, figures who are trying to impose Western concepts on colonised peoples and space. This throws their intentions into question, and encourages us to re-examine their concepts of cleanliness and purity. This process should encourage similar moves in histories of the West. This thesis thus offers a contribution to global histories of rivers, cities, and the relationship between the two.

V. Time, space and imperial history

To approach the Nile valley as a unified space, the word space must itself be defined, along with the allied concepts of time and place. Henri Lefebvre long ago established space as a constructed entity, a production of the social rather than a clear arena in which the social occurs.[94] Edward Soja, David Harvey and Doreen Massey have elaborated this starting position in various directions, but share a reading of space as multiple, contested, the dimension through which things come together and break apart.[95] Another point of agreement is that space and time are

[93] Chakrabarty, *Provincializing Europe*.

[94] Henri Lefebvre, *The Production of Space*, trans. Donald Nicholson-Smith (Oxford: Blackwell Publishing, 1991).

[95] Edward W. Soja, *Postmodern Geographies: The Reassertion of Space in Critical Social Theory* (London: Verso, 1989); Harvey, *Justice, Nature and the Geography of Difference*; Doreen B. Massey, *Space, Place and Gender* (Cambridge: Polity, 1994); *For Space*.

mutually constructive. Massey in particular has traced and dismantled the tendency to view space as a site in which things happen, a passive receiver of the active dimension, time.[96] Rather, time and space mutually construct the space-time of human events. For Massey, space is composed of multiple trajectories, while the allied concept of place represents particular concentrations of trajectories, the attempt to fix these in some kind of stable agglomeration. Space is by nature mobile, active, while places are social attempts to construct, to assemble stabilities from the multiple trajectories always already active in space.

In other realms of philosophy, somewhat different understandings of space have developed. Whereas Lefebvre was concerned with *The Production of Space*, Gaston Bachelard shone a light on *The Poetics of Space*.[97] He was concerned with the imaginary associated with particular kinds of space, from attics to cellars. He traces this through a raft of literary quotations and illusions, drawn especially from French literature. This work teases out particular visions associated with Western (perhaps specifically European and Francophone) lived spaces. What it does not offer is a way of reading these kind of poetics emanating from other societies. Despite being concerned with space, the work's reach is limited to a particular set of spatial assemblages. A grander effort to develop a philosophy of being in space is Peter Sloterdijk's *Spheres* trilogy.[98] This series is both a reply and companion to Heidegger's *Being and Time*. Concerned with psychology as much as with society, Sloterdijk traces various scales of interaction, from the smallest bubble of the individual, to the global, to the foaming of multiple, brief, ephemeral connections. Although he does cite non-Western schools of thought, and is essentially concerned with how we live in a global world, he does not escape from

[96] Massey, *For Space*.

[97] Gaston Bachelard, *The Poetics of Space*, trans. Maria Jolas (New York: Penguin, 2014).

[98] Peter Sloterdijk, *Spheres, Volume 1. Bubbles: Microspherology* (South Pasadena, California: Semiotext(e), 2011); *Spheres, Volume 2. Globes: Macrospherology* (South Pasadena, California: Semiotext(e), 2014); *Spheres, Volume 3. Foams: Plural Spherology* (South Pasadena, California: Semiotext(e), 2016).

Chakrabarty's imagined Europe. His contemporary spatialities are presented as a shift from an imagined historical stability, as if space were becoming more dynamic, rather than being in essence a fluctuating assemblage of multiple trajectories. Nonetheless, his work suggests the richness of contemporary spatial debates.

In the literature on imperial history, spatial analysis has centred on questions of locating where imperial ideas and practices were generated. Should imperialism be understood as a centralised system, with a strong core dictating to distant fringes? Or should it rather be seen as a process largely generated by dynamics within the imperial periphery, to which the metropole could only respond? These earlier models have begun to make way for a reading of empires as webs, containing multiple threads and nodes.[99] This chimes with Massey's insistence on space as an assemblage of multiple trajectories. This kind of space is essentially fluid, always in motion; efforts to restrict this flow, to stabilise the ever spinning web, construct what we term place. Place is thus imagined as both a particular spatial assemblage and the discourses which seek to stabilise space.

What concept of space can be assembled from these various discourses and applied to an analysis of the Nile valley? It is true that networks of power tend to produce local centres, and both Cairo and Khartoum act as nodes of power within the region, with the latter subordinate to the former. Massey's work provides a clear understanding of the relationship between place and space, that will underpin the analysis here. The Nile valley was a space of multiple trajectories, as all spaces are. Within this dynamic, various groups sought to develop specific places: that is to say, they sought to stabilise some sets of trajectories into something identifiable as a place. The extent to which the place being constructed was the Nile valley, or Egypt, or Sudan, or one of the cities under consideration, or some other unit, will

[99] Lester, 'Spatial Concepts and the Historical Geographies of British Colonialism'; David Lambert and Alan Lester, 'Introduction: Imperial Spaces, Imperial Subjects', in *Colonial Lives across the British Empire: Imperial Careering in the Long Nineteenth Century*, ed. David Lambert and Alan Lester (Cambridge: Cambridge University Press, 2006); for more on the physical construction of space see Christensen, *Germany and the Ottoman Railways*.

help us understand the extent to which the Nile Valley was constructed as a unified region. By unified region I mean, in Massey's terms, place. The kinds of sites created by the built environment will define whether we consider the region to be an effectively stabilised place or a shifting space in which all attempts to secure the trajectories have been thwarted. It is not expected that the answer to this question will be straightforward. There is likely a tension between various constructions of space and place, and these will be read through the individual case studies.

VI. The contribution of this study

Having surveyed a range of different literatures, it is necessary to say a word on what this thesis does not seek to do. It has already been mentioned that, though influenced by river history, this is not a river history in the same sense as many existing works: here the river is approached as one of several actors in the creation of urban/architectural space, and questions of pollution and hydrology are largely left to one side. This is not to suggest that a history of the Nile as an imperial and national river would not be a valuable contribution.[100] Equally, although international networks of architectural practice and urban design do surface in each individual case study, they are not in themselves the object of study. What this study does seek to interrogate is the relationship between architectural, urban and environmental spaces within empire.

This study has especially close ties to three books that have been published while this research was being conducted. I have already highlighted the work of Debjani Bhattacharyya in the introduction, and to her book can be added Peter Christensen's on the German contribution to the Ottoman railway system and Jennifer Derr's on life in the colonial Nile valley.[101] Each of these raises important issues which complement the work presented here, but there is no exact overlap in

[100] Tvedt, *The River Nile in the Age of the British* is a crucial contribution, of course, but remains primarily concerned with the Nile's geopolitical significance.

[101] Bhattacharyya, *Empire and Ecology in the Bengal Delta*; Christensen, *Germany and the Ottoman Railways*; Derr, *The Lived Nile*.

topic: Bhattacharyya is primarily interested in land ownership as the underpinning of urban form; Christensen with the physical infrastructure of railway development; and Derr with how Nile engineering intersects with the management of disease, bodies and the economy. My own work is concerned more with urban morphology and its shifting relationship to the environment. But by reading the four works together, we can better think through the implications of bringing together human and more-than-human action in our analyses of historical sites, people and systems. We can push towards new ways of telling histories.[102]

The research presented in this thesis will reshape our understanding of the imperial built environment in a number of ways. It will demonstrate the deep connections between urban development and other networks of environmental management and imperial power. It will show the importance of water in shaping building projects. It will enhance our understanding of a key moment in the histories of Egypt and Sudan, which can only be developed through the spatially broad but temporally narrow approach adopted here. It contributes an important case study to the growing literature on imperial urban history. It establishes ground for further research into the region, the two countries, and imperial urbanism more broadly. The ideas developed here could be tested by further research into the riverine urbanism of South Asia, Australasia, or the Americas. There could be particular value in research on other areas within Africa, perhaps those under different imperial or postcolonial regimes. Like the waters of the Nile depositing silt along its banks, this thesis hopes to leave fertile ground for new research growth.

[102] For my own contribution to this rethinking, see the Conclusion to this thesis.

Chapter 3

An imperial theatre with 'all the furniture of civilisation': the rebuilding and expansion of Sudan's capital region, 1898-1910s

On the fourth of March 1904, the *Luton Times and Advertiser* carried a story about the visit of Princess Henry of Battenberg to Khartoum. The city had been reinstated as the capital of Sudan following the Anglo-Egyptian re-conquest in the late 1890s, and was undergoing extensive rebuilding. The paper informed readers:

> A strange contrast between the new and the old order of things is suggested in the announcement that Princess Henry of Battenberg has now "well and truly laid" the foundation stone of a new English church at Khartoum. Only a year or two ago, the desert spread hopelessly around the unvisited grave of Gordon, and now a thriving and populous town has arisen, a place of easy and pleasant resort to English holiday-makers, who run up the Nile for a change of air, and make in a week the journey that seemed, even to men who are middle-aged still, the achievement of a life-time.[1]

One of these holiday-makers was the former mountaineer Emily Hornby. She travelled down the Nile in the winter of 1904-5 and then again the following year. During her second trip, she was enthusiastically shown around the new Gordon College by its director. In her journal, Hornby described the school as 'an enormous building… Gardens all round, very fine oleanders, and beds full of convolvulus minor'.[2] Every floor had spacious corridors, and there was a museum with objects connected to the conquest of Sudan as well as biological specimens. Hornby declared the school's library the 'most interesting and satisfactory' thing that they were shown on their visit, as its large collection of 'boys' story books' showed that the pupils must be learning English thoroughly.[3] As the visit wore on, Hornby and her companions, who were due to leave Khartoum that day, grew

[1] 'Princess Henry at Khartoum', *Luton Times and Advertiser*, 4 March 1904.
[2] Hornby, *A Nile Journal*, 132.
[3] Hornby, 134.

increasingly anxious about time, but the director was not to be hurried. He took them through the gardens, showed them the kitchen, and wished to show them an unspecified building filled with machinery, 'but *that* F. and I did firmly refuse to enter. I have a horror of machinery at any time, and never understand it.'[4] Eventually the group was able to leave, and make haste for the train far later than anticipated.

What can we understand of the history of Khartoum from this brief interaction among the colonial elite? The everyday life of the city is certainly obscure here: Hornby is a witness from the outside, being guided by a representative of the occupying force, around a space itself designed to reproduce the Anglo-Egyptian regime.[5] The ways in which this institution depended on the labour of local builders, cooks, porters and so on was not something the school's director was likely to draw attention to, and while Hornby does sometimes give small glimpses into the lives of ordinary people she was far too preoccupied to do so on this occasion. But this very act of obscuring, ignoring or silencing the city beyond the walls of imperial institutions tells us something of the governing ideology of empire. The ways in which certain places were seen as metonyms for Khartoum while large areas of the city were completely ignored was part of the operation of power in urban space.

Gordon College had been created to honour the memory of General Charles Gordon by bringing education to the elite families of northern Sudan. It therefore had a key place in British understandings of their supposed civilising role in the region: creating a space for education demonstrated the distinction between the Mahdist regime and the new imperial power. Along with government buildings, transport systems, police stations, prisons and the Anglican Cathedral designed by

[4] Hornby, 134.

[5] Ironically, the institution became an incubator for Sudanese nationalism. See Ashley Jackson, *Buildings of Empire* (New York: Oxford University Press, 2013), 194–219.

Robert Weir Schultz, the college was part of the spectacle of colonial power.[6] In this chapter I will argue that the creation of these symbolic sites within the built environment was a central part of the performance of power in which British officials (and others) were engaged. This performance of British superiority was in some ways the most significant function of the city of Khartoum. It was designed to show visitors like Hornby that the empire was both powerful and benevolent. Architecture and urbanism created a theatre of imperial power.

In itself, such a claim is not new. The place of architecture in the imperial imagination has long been studied and is thoroughly established.[7] Nor am I claiming that these structures were purely symbolic: they play a role in the material as well as cultural infrastructure of empire.[8] Rather, in this chapter I am interested in teasing out the ways in which the built environment operated as an element in the spectacle that underpinned British power in the region. In this approach, what mattered about a city like Khartoum was as much how it was perceived as how it functioned. Thus, the discussion, representation, dissemination and reproduction of ideas about the architecture and urbanism of Khartoum was as much part of the imperial system as the actual production of a new built environment. In order to explore this process thoroughly, this chapter examines architectural structures not as individual works but for how they were understood as elements of a broader imperial production. What work are ideas about buildings doing in the propaganda

[6] The importance of spectacle in imperial power in Sudan has been highlighted by Justin Willis, 'Tribal Gatherings: Colonial Spectacle, Native Administration and Local Government in Condominium Sudan', *Past & Present*, no. 211 (2011): 243–68.
[7] To name just a few examples: Thomas R. Metcalf, *An Imperial Vision: Indian Architecture and Britain's Raj* (London: Faber, 1989); Crinson, *Empire Building*; Bissell, *Urban Design, Chaos, and Colonial Power in Zanzibar*; Bremner, *Imperial Gothic*; Emily Turner, 'The Church Missionary Society and Architecture in the Mission Field: Evangelical Anglican Perspectives on Church Building Abroad, C. 1850-1900', *Architectural History* 58 (ed 2015): 197–228, https://doi.org/10.1017/S0066622X0000263X; Bremner, *Architecture and Urbanism in the British Empire*; Longair, 'Scottish Architects, Imperial Identities and India's Built Environment in the Early Twentieth Century'.
[8] On the relationship between colonial infrastructure as physical network and as cultural production see Larkin, *Signal and Noise*; and Christensen, *Germany and the Ottoman Railways*; on the complexities and ambiguities of the term more generally see Chattopadhyay, *Unlearning the City*.

of empire?[9] How do architecture, urbanism, gardening and other ways of structuring space work together to create imperial spectacle?

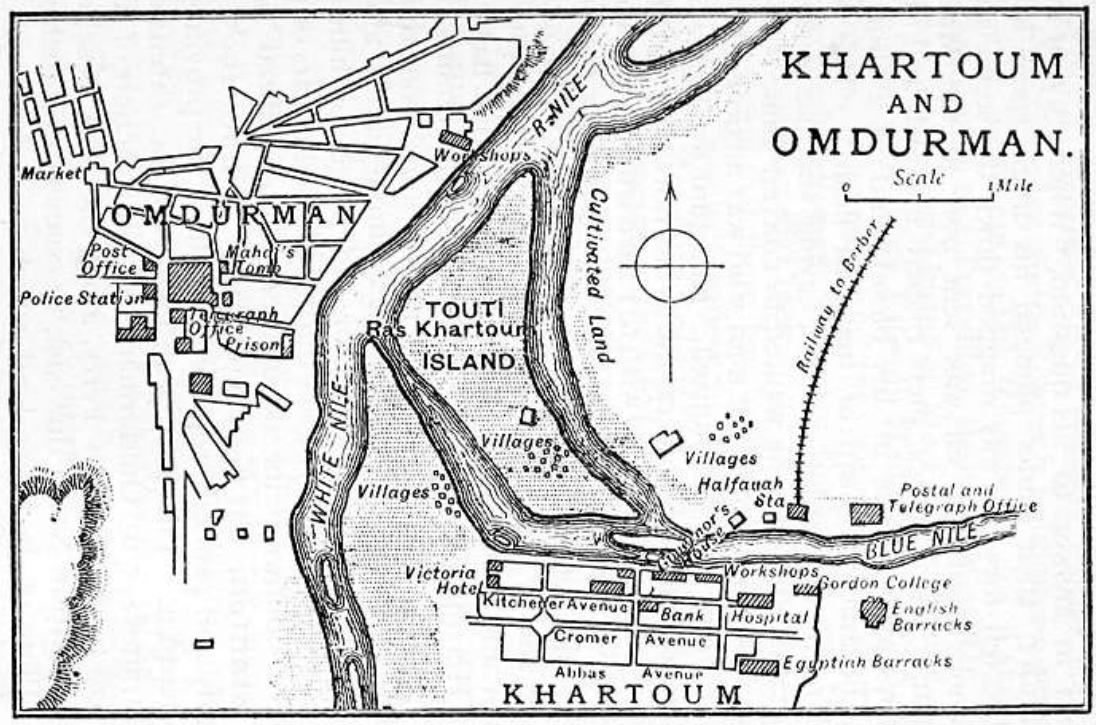

Figure 3-1 Map of Khartoum and Omdurman in 1905. E. A. W. Budge, Cook's Handbook for Egypt and the Sudan, *(London, 1906), public domain, Wikimedia commons. Note the line of the railway, and the village of Halfayah, which would grow into Khartoum North.*

Sudan's capital region, sometimes known as Greater Khartoum, comprises three cities around the banks of the Blue and White Niles at the point where these rivers meet. The Blue Nile flows in from the east, fed by Lake Tana in Ethiopia; the White Nile flows north from equatorial Africa, its waters emerging from Lake Victoria and the other lakes of the Rift Valley. The strategic importance of Sudan's capital region for the governance of Egypt lay in its position at the meeting point of the most significant Nile tributaries: it was here that the waters of the annual flood on which Egypt depended combined and could be measured, giving some indication of the

[9] This is similar to the argument in Bissell, *Urban Design, Chaos, and Colonial Power in Zanzibar* that planning documents have a function beyond their implementation. Whereas Bissell is focused on the impact on the built environment, I am more concerned with imperial ideas and ideology; the history of how such ideas were spread is itself a rich field of research, often drawing on MacKenzie, *Imperialism and Popular Culture*; a good later example of such work is Anandi Ramamurthy, *Imperial Persuaders: Images of Africa and Asia in British Advertising*, Studies in Imperialism (Manchester: Manchester University Press, 2003).

water level to be expected further north.[10] The channels of the Blue Nile, the White Nile, and the main river flowing northwards, divide the land into three parts. In the south-east is Khartoum, the oldest of the cities, which started life as an Egyptian military camp in the 1820s; to the west is Omdurman, which was the capital of independent, Mahdist Sudan from 1885-1898; to the north-east lies Khartoum North, now known as Bahri, which developed after the Anglo-Egyptian conquest.[11] There is also an island at the centre of the confluence, called Tuti.[12] The ways in which British officials imagined and defined these spaces would have a lasting impact on their form and function long after empire ended.[13] Today, Khartoum is the most populous and Bahri the least; in the past Omdurman was by some margin the most heavily populated, although early population statistics for Sudan should be taken with large doses of salt.[14] Khartoum has remained the seat of political power since 1898.

When Britain seized power in Egypt in 1882, it also acquired vast territories to the south that Ottoman Egypt had conquered in the nineteenth century. These are what became Sudan. Britain had little interest in this region for itself, but as Egypt is

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[10] For more on the form and hydrology of the Nile see Henri J. Dumont, ed., *The Nile: Origin, Environments, Limnology, and Human Use*, Monographiae Biologicae 89 (Dordrecht, Netherlands: Springer, 2009) especially chapters 1 and 17; the Nile's waters were heavily studied as part of imperial rule, indicative works include J. C. Ardagh, 'Nilometers', *Proceedings of the Royal Geographical Society and Monthly Record of Geography* 11, no. 1 (1889): 28–38, https://doi.org/10.2307/1800840; Peel, *The Binding of the Nile and the New Soudan*; A. S. W., 'Hydrography of the Nile', ed. William Garstin, *The Geographical Journal* 25, no. 1 (1905): 75–77, https://doi.org/10.2307/1775985; J. J. Craig, 'The Water Supply of Egypt and Sudan', *The Contemporary Review* 127 (January 1925): 163–70; the most significant imperial hydrological engineer involved in studying the Nile was William Willcocks, whose extensive writings include *The Nile Reservoir Dam at Assuan and after*; and *The Nile in 1904*; on the relationship between Nile hydrology and imperialism see Tvedt, *The River Nile in the Age of the British* especially 'Part I: A River Conquered'.

[11] Attempts to describe this urban region go back at least as far as Hamdan, 'The Growth and Functional Structure of Khartoum'; imperial officials use Khartoum as an umbrella term to refer to all three, as well as the specific name of Khartoum proper W. H. McLean, 'Town Planning in the Tropics, with Special Reference to Khartoum', *The Town Planning Review; Liverpool* 3, no. 4 (1 January 1913): 225–231; Edwin Sarsfield-Hall, 'Khartoum: Past, Present and Future' (The Town Planning Conference, Welwyn Garden City, 1933) I will use Bahri to refer to the contemporary town and Khartoum North for the historical period.

[12] Tuti's history is largely as a space set apart from the cities on the shore. See H. R. J. Davies, 'A Rural "eye" in the Capital: Tuti Island, Khartoum, Sudan', *GeoJournal* 33, no. 4 (1 August 1994): 387–92, https://doi.org/10.1007/BF00806421.

[13] For the postcolonial history see Ahmad, 'The Neighbourhoods of Khartoum: Reflections on Their Functions, Forms and Future'; and 'Khartoum Blues'.

[14] http://worldpopulationreview.com/countries/sudan-population/cities/ gives Khartoum a population of 1,974,647 and Omdurman 1,200,000 (figures checked 21 Jan. 2020). It is quite difficult to find these as separate figures, as Khartoum is also the name of the province.

dependent on the Nile for water, and the Nile flows through Sudan, any power in Cairo must also be concerned with the lands to the south. Holding Sudan soon proved more difficult than the British might have hoped. Muhammed Ahmad, a religious leader who had been hailed as the Mahdi (a messiah foretold in Islamic scripture) by his followers in 1881, gathered forces against the regime and defeated the Egyptian army. Unwilling to become entangled in a desert war, the British government under Prime Minister William Gladstone dispatched General Charles Gordon to Khartoum to oversee a managed retreat. Gordon had served as Governor General of the Sudan under the Egyptian Khedive in the past, and so was recruited for his knowledge of the region. He did not agree with the strategy he had been sent to implement, however, holding that the Sudanese could be made governable again if only their justified resentments against the Ottoman-Egyptian regime were dealt with. Rather than simply managing the retreat to Khartoum and then evacuation northwards, Gordon sought to use the city as a base for a new government for Sudan. Khartoum was besieged by Mahdist forces from March 1884 to January 1885, when the city was stormed and Gordon slain.[15] A British relief force arrived too late, and the press portrayed the defeat as a national humiliation. Gladstone's government was blamed, and Gordon became a national hero, rapidly incorporated into the mythology of empire.[16] The Mahdi died in 1885, but was succeeded by his right-hand man, known as the Khalifa. The British were driven from Sudan, and did not return until the 1890s, when General (later Lord) Herbert Kitchener led Anglo-Egyptian forces in a brutally successful reconquest. Omdurman, the Mahdist capital, was stormed in 1898.

By that time, little was left of Egyptian Khartoum, and so British officials created a new capital on the old site. The first street plan is said to have been laid out by

[15] For a detailed account of British strategy and the divide between Gordon and Gladstone, see Nicoll, *Gladstone, Gordon and the Sudan Wars: The Battle over Imperial Intervention in the Victorian Age*.
[16] On the Gordon myth see Jones, "'National Hero and Very Queer Fish'".

Kitchener himself, using a grid pattern with diagonal streets cutting across to ease military access. Kitchener may have been less involved than sometimes claimed, his subordinates Milo Talbot, G. F. Gorringe and John Maxwell were likely the chief figures.[17] Later stories claim that this design is a deliberate echo of the union flag, but there seems to be no contemporary evidence for this. Indeed, there is nothing especially unusual about this layout that would need such an explanation, picturesque though it may be. In the early years, Anglo-Egyptian Sudan was governed largely by military officials, led by the governor-general Reginald Wingate, who in the 1890s had led the intelligence division that was crucial to the reconquest of Sudan. Wingate occupied a new palace built on the site of the previous governmental palace, and a statue of Gordon was erected in the grounds. This was where the great imperial hero was thought to have fallen. Most government departments had their headquarters in Khartoum, although the public works department was based in Khartoum North.[18] As well as governmental buildings, the early years of the condominium saw the construction of Gordon Memorial College and, somewhat later, All Saints' Cathedral in Khartoum. Building codes introduced by the British allowed taller buildings only in Khartoum, ensuring that Omdurman and Khartoum North could not rival it in architectural endeavours. This must always be remembered when we read European sources depicting Omdurman as a backward collection of huts: this kind of building was written into its laws.[19]

In what follows, I will approach the history of Sudan's capital region in a series of different ways. The first section examines war and technology, how these not only formed the basis of imperial knowledge of Sudan but also shaped its development long after conquest. The second section reveals how imperial officials and other

[17] Daly, *Empire on the Nile*; see also Ahmad, 'Khartoum Blues'.

[18] Martin W. Daly and Jane R. Hogan, *Images of Empire: Photographic Sources for the British in the Sudan*, Sources for African History 3 (Leiden: Brill, 2005).

[19] W. H. McLean, 'The Planning of Khartoum and Omdurman in the Earliest Period of British Rule [1910]', in *Urbanization and Urban Life in the Sudan*, ed. V. Pons, advance edition (Hull, 1980).

European travellers feared the environment of the Nile Valley, how its floods and dust-storms alienated them and how they portrayed this as a land of the other. The third section turns to the river itself, to the importance of water in the construction of urban space, and how this ancient network related to the new infrastructure of steel and steam: the railway. The fourth section uncovers how imperial planners used history to shape urban development, establishing their credentials as planners through the control of the past. The fifth section considers the built environment itself, as an architecture of imperial power and display. These various approaches, brought together in all their cross-cutting strength, will inform the conclusions offered in the final section. This chapter introduces many of the key themes that will run through this thesis. I will show that the capital region pieced together by imperial officials was one clearly marked by their assumptions concerning people and environment. It was imagined, primarily, as a site to display the superiority of Europeans: what I term a theatre of imperial power.

I. Blood and steam

The Anglo-Egyptian forces that reconquered Sudan between 1896 and 1898 relied on steam technology for supplies. As they marched south from Egypt, they were accompanied by a network of steel rails. The conquest was, in a literal sense, infrastructural as much as military. Or, rather, the imperial military of the 1890s was itself thoroughly technological. Two classic accounts of this invasion were published shortly after the conquest was complete: *With Kitchener to Khartum* by G. W. Steevens, and *The River War* by a young Winston Churchill.[20] Both writers include extensive sections on the railway, and both make clear that it was this rapidly created infrastructure that made the conquest possible. Their accounts reward

[20] G. W. Steevens, *With Kitchener to Khartum* (New York: Dodd, Mead & Company, 1898); Winston S. Churchill, *The River War: A Historical Account of the Reconquest of the Soudan, Two Volumes*, First edition (London: Longmans, Green, and Co., 1899).

further examination, as they reveal much about the place of military infrastructure in imperial practice and ideology.

Steevens begins his book with a walk through the town of Wadi Halfa. This small, heavily militarised settlement marked the border between Sudan and Egypt, and was the base from which the Anglo-Egyptian invasion was launched. Steevens guides us through the town, using its scenes as moments to illuminate particular features of what he calls 'the romance of the Sudan.'[21] When he arrives at the train workshops, we are left in no doubt that these are the essence of modern warfare:

> And now we have come to the locomotive-sheds and the fitting-shops, the boiler-houses and the store-rooms; we are back in the present again, and the Halfa of to-day is the Egypt of to-day. Halfa has left off being a fortress and a garrison; to-day it is all workshop and railway terminus. To-day it makes war not with bayonets, but with rivets and spindle-glands. Railways run along every dusty street, and trains and trucks clank up and down till Halfa looks for all the world like Chicago in a turban.[22]

Egypt, as we will see many times in this thesis, is imagined here as a crucible of modernity.[23] The signal of this modernity is the defining role of the machine: dedicating whole sections of a town to railway sheds and the supporting trades makes it as modern as Chicago. 'From the shops of Halfa the untamed Sudan is being tamed at last.'[24] This section is preparing us for the third chapter, in which Steevens expands at length on the workings and importance of the Sudan Military Railway.

'Everybody knew that a railway from Halfa across the desert to Abu Hamed was an impossibility – until the Sirdar turned it into a fact', Steevens declares in setting out the significance of the engineering feat that took British troops into the heart of

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[21] Steevens, *With Kitchener to Khartum*, 1 romance is used here in the sense of a heroic narrative.

[22] Steevens, 7.

[23] This is also the focus of Mitchell, *Rule of Experts*.

[24] Steevens, *With Kitchener to Khartum*, 8.

Sudan.[25] The Sirdar was the highest ranking general in the Egyptian Army, the overall commander of the forces invading Sudan; at this time it was Sir Horatio Herbert Kitchener, who would later become Lord Kitchener. Both Steevens and Churchill praise him, though Steevens is especially lavish. In fact, so complete is his admiration that he portrays Kitchener as a machine quite as marvellous as the military railway:

> He has no age but the prime of life, no body but one to carry his mind, no face but one to keep his brain behind… You cannot imagine the Sirdar otherwise than as seeing the right thing to do and doing it. His precision is so inhumanly unerring, he is more like a machine than a man. You feel that he ought to be patented and shown with pride at the Paris International Exhibition. British Empire: Exhibit No. I., *hors concours*, the Sudan Machine.[26]

Here we see the mechanistic ideology of these accounts writ large: even the general in command cannot be granted humanity, but must aspire to be as much like a set of steel rails as possible. Contrast this technocratic vision of mechanical power with Hornby's 'horror of machinery'.

In detailing the excruciating process of driving a military railway through the desert, Churchill's more lengthy account far surpasses Steevens'. The latter mentions the challenge of bringing up supplies on the railway that also had to bear the materials for its own extension, but Churchill forces us to focus on the 'things' of war that must be passed along 'the long trailing line of communications'.[27] He makes a general point about how we tend to focus on the drama of battle, before going on to claim that transport was even more important than usual in this particular war:

> In savage warfare in a flat country the power of modern machinery is such that flesh and blood can scarcely prevail, and the chances of battle are

[25] Steevens, 23.

[26] Steevens, 45–46.

[27] Winston S. Churchill, *The River War: A Historical Account of the Reconquest of the Soudan, Volume 1*, First edition (London: Longmans, Green, and Co., 1899), 275.

> reduced to a minimum. Fighting the Dervish was primarily a matter of transport. The Khalifa was conquered on the railway.[28]

He then expands on the challenges of each stage of the laying of the line, the dangers of running out of water, the vulnerability of the growing line, and so on. The modernity that the Egyptian Army was carrying into Sudan ran on slender, vulnerable rails. The mechanised forces imagined by both Churchill and Steevens are awe-inspiring in power but also terrifyingly unprotected against the untamed place they seek to master.

The climax of this technological invasion, however, was a battle heavy with imperial symbolism. It was also bloody. Steevens' phrase – 'It was not a battle, but an execution.' – was not intended as an indictment, but a description of sheer military force. The aftermath of the battle, however, saw killing on a scale condemned by Churchill and others since. Amid the mass killing of Mahdist soldiers, the body of the Mahdi himself was taken from its tomb, decapitated, and hurled into the River Nile. It is said that Kitchener kept the head.[29] The force that had descended on Sudan's capital region as a finely calibrated machine unleashed its human fury at Omdurman. Across the river from the site of Gordon's fall, Mahdism was crushed. The symbolism was not lost on the observers. It would become central to the British mission in Sudan, with every act read as a commemoration of the storied hero of Khartoum.

The tomb of the Mahdi, which had been a significant building at the heart of the regime in Omdurman, was left in ruins. In Hornby's words, this was 'to prevent the fanatical Mahdists from making it into a shrine and place for pilgrimages.'[30] This does not mean that it was not a site of pilgrimage, but that the pilgrims invited to view the ruins were European travellers like Hornby herself. She and her companions

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[28] Churchill, 277.

[29] For a detailed discussion of exactly what may or may not have happened after the battle see Daly, *Empire on the Nile*.

[30] Hornby, 'A Tour in Egypt, 1904-5', 880/10/186.

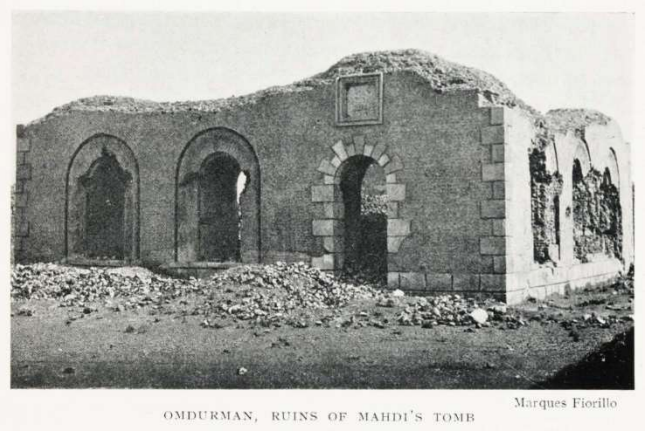

Figure 3-2 Marques Fiorillo 'Omdurman, ruins of Mahdi's tomb', 1906. TIMEA https://scholarship.rice.edu/handle/1911/20977.

signed a visitors' book in what had been the house of the Khalifa, the Mahdi's successor. The site was, thus, reproduced as a memorial to British power, the ruins standing as a reminder of military strength. Just as Khartoum would be rebuilt to honour the hero Gordon, so the Mahdi's tomb would be left broken, a sign of the life and death power of empire.[31] Rubble tells the audience that the force of the empire will always crush its enemies.

The following section expands upon the British perception of the Nile valley environment. The military machine depicted by Steevens and Churchill was engaged in conquering a wild, untamed landscape. Examining how officials and travellers depicted the Nile valley will help us understand the ways in which they sought to transform it into something else.

II. Landscapes of fear

Numerous diaries, letters, reports, photographs and articles survive from the first generation of British officials and travellers in the newly conquered Sudan. What they portray is a landscape that often turned against them, which they found bleak, alien and other. The importance of architecture and urban planning in asserting a separation from this dangerous environment will become clear from a careful reading of these sources.

A Briton who had never travelled to Sudan, but who traced the empire's role there through the newspapers, would have been treated to only occasional updates.

[31] On this model of power see Mbembe, 'Necropolitics', 1 January 2003.

These were generally optimistic and often bombastic. H. Hamilton Fyfe is not untypical: 'Some day Khartoum will be the garden city of Africa,' he declared in the *Daily Mail* in 1910, 'It has been laid out with that view.'[32] The garden city movement was a burgeoning trend in urban planning that we will meet again in Cairo's suburbs in chapter five. Khartoum was designed along lines of military convenience, so to place it among garden cities may seem somewhat fanciful. Nonetheless, there is a strong connection between colonial cities and the spread of the garden city ideal.[33] In Khartoum, and other colonial settings, gardens and landscaping were used to create pleasing areas for European inhabitants, but zoning and street layout focused on racial segregation and easing military access.[34] Hamilton Fyfe portrays a brave group of British planners ('Englishmen and Scotsmen and Irishmen, not forgetting Welshmen') thinking to themselves:

> "some day this vast country [Sudan] will, instead of being mostly desert, be covered with wheat fields and cotton fields. Work and water will turn the barren sand into one of the great producing countries of the world. In that day Khartoum will no longer be the head place of a province which is still looked upon as the Cinderella of the British empire and treated accordingly.
>
> "It will be the capital of a rich and powerful dominion. Whether it will be fitted to play this important part in the world drama, and set an example to other capitals, depends on us," said these Britons, filled with a great hope and pride; and they mapped out the place accordingly.[35]

[32] H. Hamilton Fyfe, 'Khartoum Today: Destined to Be the Garden City of Africa (from London Daily Mail)', *Los Angeles Times*, 24 April 1910.

[33] Bigon and Katz, *Garden Cities and Colonial Planning*; Liora Bigon, 'Garden Cities in Colonial Africa: A Note on Historiography', *Planning Perspectives* 28, no. 3 (1 July 2013): 477–85, https://doi.org/10.1080/02665433.2013.800716; the foundation text of the garden city movement is Ebenezer Howard, *Garden Cities of To-Morrow*, Second edition of "To-morrow: A peaceful path to real reform" (London: Swan Sonnenschein & co., 1902).

[34] Racial segregation as a formal set of policies is largely an invention of settler colonialism in the twentieth century, but efforts to maintain separation between those with power and those without have deep roots in the history of cities. See Nightingale, *Segregation*.

[35] Hamilton Fyfe, 'Khartoum Today: Destined to Be the Garden City of Africa (from London Daily Mail)'.

Note the intriguing shift from the separate nations of the United Kingdom to one shared identity as Britons.[36] These imperial champions are portrayed subduing an unruly landscape to their will, making dust fertile and creating urban order, all through the typically imperial act of mapping. Similarly, *The Manchester Guardian* in 1913 reported that Khartoum had been resurrected from 'a mass of deserted ruins'.[37] The new city has:

> many large and handsome public and private buildings, cathedrals, a mosque, schools, hospitals, hotels, metalled roads and boulevards, excellent water and electric light supplies, railways, trams and ferries, and all the furniture of civilisation.

Altogether, the popular vision of Khartoum in Britain was of an imperial success, always coloured by the reputation of Gordon, its imperial saint. The business of actually constructing the material Khartoum, rather than the vision offered up in these glowing reports, often strained the nerves of imperial officials rather more than they generally let on. This can be read in their private documents from the time.

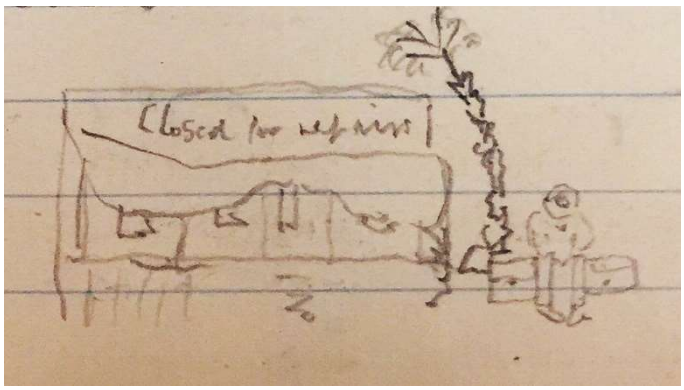

Figure 3-3 from Llewellyn Gwynne's notebook, Sudan Archive Durham University, 33/5/8.

'We are all afloat here at Khartoum,' wrote the Llewellyn Gwynne, who would later be Bishop of Khartoum, around 1906. 'Huge pools of water appear all over the place.'[38] His notebook includes cartoonish

[36] For more on how empire forged Britishness, with a particular focus on the built environment, see G. A. Bremner, 'The Expansion of England? Rethinking Scotland's Place in the Architectural History of the Wider British World', *Journal of Art Historiography*, 2018, https://search-proquest-com.ezproxy.is.ed.ac.uk/docview/2053259512/abstract/ACC89958D5B34F7DPQ/1; see also John M. MacKenzie, 'Irish, Scottish, Welsh and English Worlds? A Four-Nation Approach to the History of the British Empire', *History Compass* 6, no. 5 (1 September 2008): 1244–63, https://doi.org/10.1111/j.1478-0542.2008.00543.x.

[37] 'Khartoum: The Resurrection of a City', *The Manchester Guardian*, 11 June 1913.

[38] Sudan Archive, Durham University, 33/5/9.

sketches of his house damaged by floods (**figure 3-3**). Although colonial maps show land and water each in their place, the waters of the Nile were not much given to obeying cartography.[39] The dry desert that was the primary British image of Khartoum, became inconveniently wet during the flood. In preparing designs for an Anglican cathedral for the city, Robert Weir Schultz asked first for details of the soil on which it was to be constructed. The report and samples that came back made it clear that while the ground was generally dry, loose and sandy, during the flood it was transformed into heavy, saturated sod. As we will see again in the next chapter, the very ground upon which the British Empire sought to inscribe itself was seen as untrustworthy, changeable and shifting.

Figure 3-4 postcard from the diary of George Storrar, SAD 50/1/231. Originally sold by 'G. N. Morhig, The English Pharmacy, Khartoum.'

Far more alien than urban flooding were the great sand-storms that sometimes blew in off the desert. Scientists now know that haboobs, as these kind of storms

[39] For a detailed case study of how British imperialists sought to define land and water to enable urban development, see Bhattacharyya, *Empire and Ecology in the Bengal Delta*.

are called, can be found in desert environments across the world.[40] To imperial officials in the early twentieth century, however, the sudden swirl of sand-laden wind down their streets was a clear sign of the strange, aggressive landscape in which they found themselves. The early meteorological studies of the phenomenon treated it as a peculiarity of Sudan, only over decades did researchers discover that other desert areas were prone to the same type of storm.[41] Thunderstorms pull air towards them, but when the storm is released rapidly cooling winds are blown outwards; if sufficiently strong, these raise up great walls of dust moving at upwards of thirty miles per hour and accompanied by a rapid drop in temperature.

Postcards of Khartoum engulfed in sand could be purchased as souvenirs. In **figure 3-4**, all that is left to see is water, desert and sand. The settlement of Khartoum North, as an architectural artefact, has vanished in the blinding cloud of dust. Floods might be inconvenient, but they can hardly have been unknown to European imperialists. This threat was of a different, far more intimidating, order. Yet capturing it in the photographer's lens perhaps transforms this view into something else: an image of the wild power of the environment that colonial officials were seeking to master. An insistent, towering other threatening the order of urban modernity.[42]

British officials across the empire took the biblical injunction to conquer and cultivate the earth very seriously. Desert dust was not merely an inconvenience, it was evidence that Khartoum was surrounded by cursed wasteland. This was meant

[40] And even on Mars: Rebecca Boyle, 'Everything About Mars Is The Worst', *FiveThirtyEight* (blog), 9 March 2017, https://fivethirtyeight.com/features/everything-about-mars-is-the-worst/.

[41] To trace the history of research into haboobs in Sudan and then in the United States see L. J. Sutton, 'Haboobs', *Quarterly Journal of the Royal Meteorological Society* 51, no. 213 (1925): 25–30; James Strachan Farquharson, 'Haboobs and Instability in the Sudan', *Quarterly Journal of the Royal Meteorological Society* 63, no. 271 (1937): 393–414; S. B. Idso, R. S. Ingram, and J. M. Pritchard, 'An American Haboob', *Bulletin of the American Meteorological Society* 53, no. 10 (1 October 1972): 930–35, https://doi.org/10.1175/1520-0477(1972)053<0930:AAH>2.0.CO;2; S. B. Idso, 'Haboobs in Arizona', *Weather* 28, no. 4 (April 1973): 154–55.

[42] Modernity is often performed through its relationship to such others, for example mountains have figured strongly in the generation of ideas and imagery concerning the modern. See Thomas Simpson, 'Modern Mountains from the Enlightenment to the Anthropocene', *The Historical Journal* 62, no. 2 (June 2019): 553–81, https://doi.org/10.1017/S0018246X18000341.

literally: land that was going to waste. Colonialists in Australia, India and New Zealand feared the spreading sands of the desert as evidence of the ecological damage perhaps caused by empire.[43] Dust on the streets of Alexandria was seen as disordered, an affront to the clean sweep of modernity.[44] How much more unnerving is the sight of dust cloaking an entire city? Haboobs invaded the streets and blocked the windows of Khartoum, forcing people indoors and darkening the sky. The sand of the desert blew into the colonial garden city as the revenge of the wasted land, making a mockery of attempts to secure the urban against the encroachment of the landscape. Just as the flood threatened the foundations of the colonial city, so the sandstorm threatened to erase it.

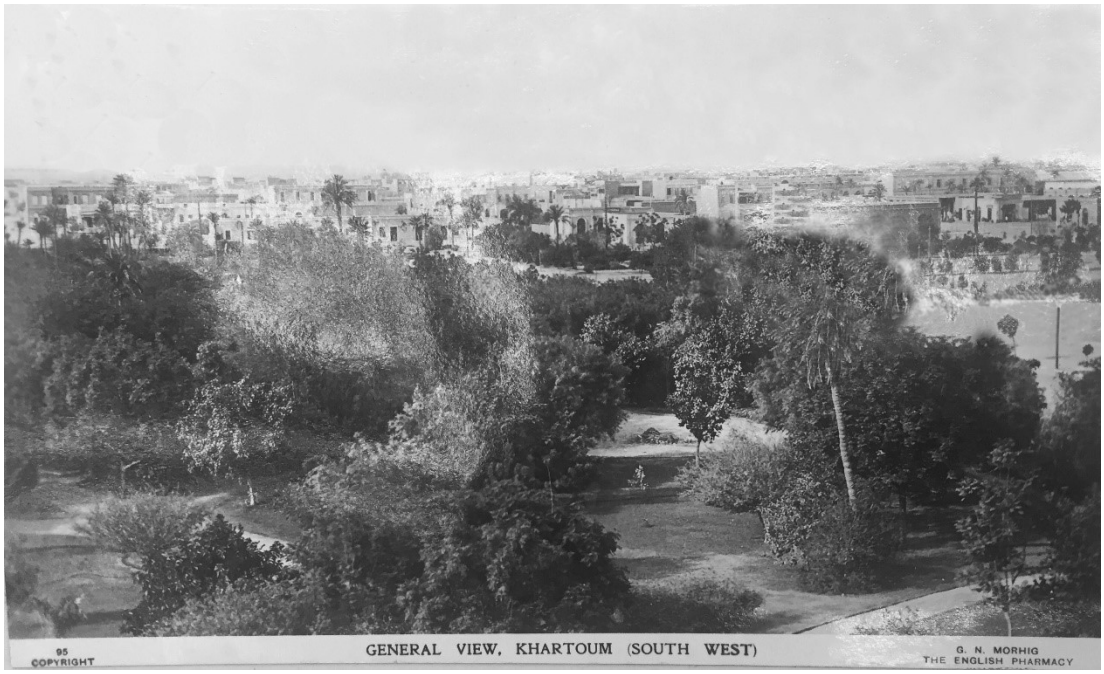

Figure 3-5 postcard from the diary of George Storrar, SAD 50/1/231. Originally sold by 'G. N. Morhig, The English Pharmacy, Khartoum.'

A contrasting postcard illustrates this point. **Figure 3-5** shows a view of Khartoum in which greenery fills the foreground. The African garden city hailed by Hamilton Fyfe is shown here as a harmonious collaboration between verdant nature and

[43] Beattie, *Empire and Environmental Anxiety: Health, Science, Art and Conservation in South Asia and Australia, 1800-1920*, chap. 7.
[44] Barak, 'Scraping the Surface'.

ordered architecture, a space of Christian productivity. There is nothing here that is not precisely in its place, and no wilderness threatens this well-ordered demonstration of imperial rule. Two kinds of violence are obscured in this kind of imagery: the war and military occupation that created and shaped the city; and the dangers of a hostile environment that colonial officials feared. All here is tamed and subdued.

The mastering of Khartoum, the effort to re-inscribe it upon the landscape, was about more than creating a new imperial capital. British planners were seeking to remake the environment itself. The improved environment should be fit for Europeans, although at the same time areas for Africans should not be allowed to break out of European stereotypes of what an African city ought to look like. Thus, the creators of Khartoum performed a dual move of pushing the city to be 'European', while creating building laws that ensured that the neighbouring urban developments remained distinctly African.[45] This connection between environmental and political mastery is a theme that will run throughout the following chapters, and which also connects to the place of the capital region in relationship to networks of water and rail.

III. Water, rail and the construction of space

> Khartoum and Omdurman are what they are because here the two great [Nile] tributaries join their forces and set out across the waterless desert on their great mission to Egypt.[46]

[45] Modernity has been forged by such two part moves, as shown by Latour, *We Have Never Been Modern*; and recently reasserted in *Facing Gaia*; for other histories of colonialism's two way moves in urban planning see michael ralph, 'Oppressive Impressions, Architectural Expressions: The Poetics of French Colonial (Ad)vantage, Regarding Africa', in *African Urban Spaces in Historical Perspective*, ed. Steven J. Salm and Toyin Falola, Rochester Studies in African History and the Diaspora (Rochester, NY and Woodbridge, Suffolk: University of Rochester Press with Boydell and Brewer, 2005), 22–47; Myers, *Verandahs of Power*; Bissell, *Urban Design, Chaos, and Colonial Power in Zanzibar*; and in a different context Maria Kaika, 'Dams as Symbols of Modernization: The Urbanization of Nature Between Geographical Imagination and Materiality', *Annals of the Association of American Geographers* 96, no. 2 (1 June 2006): 276–301, https://doi.org/10.1111/j.1467-8306.2006.00478.x.

[46] Peel, *The Binding of the Nile and the New Soudan*.

So declared Sidney Peel in 1904, describing the positions of Khartoum and Omdurman at the confluence of the Blue and White Niles. The riverine environment does much more than simply provide a setting for these cities. It has an intimate relationship with the urbanism of the capital region, shaping not only street layouts but the kinds of building that are possible. The rail network, a new arrival on the scene, itself shaped development in particular ways: Sudan's capital region is deeply embedded in these two networks, and tracing how will tell us much about the history of these cities.

Two maps will guide this analysis. One is from military intelligence in 1898, the other from a memorandum on the planning and history of Khartoum prepared by the provincial governor Edwin Sarsfield-Hall in 1933. We will hear more of him in the next section, but for the moment what is important is the purposes for which these maps were prepared. In the military map, Khartoum and Omdurman appear as notable areas in a riverine environment, reflecting the priorities of those planning the conquest of Sudan. This is the region to which the rails carried Kitchener and his troops. The Nile is the most striking feature, and important details of the terrain around Omdurman are also included. By contrast, the civil map prepared thirty-five years later shows more concern with the layout of building plots, as we would expect from such a document. The Nile plays a clear role in shaping the layout, but there is less detail in the portrayal of the river than in the earlier map. Other than Tuti, islands are not shown. These obvious differences in cartographic style are driven by the different purposes of the two maps, but they are also useful in highlighting how an essentially military form of colonialism might see a site very differently from later regimes.[47]

What emerges from looking at the 1898 military map (**figure 3-6**) of the region alongside the accounts of Steevens and Churchill, is the sense of an empty

[47] The importance of mapping and legibility to modern states has been highlighted by Scott, *Seeing Like a State*.

landscape only enlivened by the river. The waste land stretches to either side in expanses of white, while the river has form and detail, including many smaller islands. The only ground which receives much attention is that in the vicinity of the Battle of Omdurman. The military official perceives this environment as essentially empty, minus some key details. This is perhaps not all that surprising in itself, as military organisation requires a specific kind of clarity in order to emphasise the most important points. The reason that this is important to understanding empire in Sudan is that the military men who led the invasion of the region became the leading figures in its colonial state. Reginald Wingate, the Governor General from 1899-1916 and the guiding mind behind the British system of rule in Sudan, was director of military intelligence at the time this map was prepared. This is not to say that military officials did not also prepare more detailed urban maps, there is one in the same National Archives file. Rather, I am making the point that this way of seeing the city within a specific geographical imaginary has to be grasped to understand how the Anglo-Egyptian regime thought of its territory. Recall, also, that the primary aim of the British in Sudan was to control the flow of water to Egypt: not only was seeing it as an empty space useful in terms of strategic clarity, it also justified and made visual the notion that Sudan could be made into a pipeline for Egypt. The less messy detail there was in the southern desert, the better for the governing power.

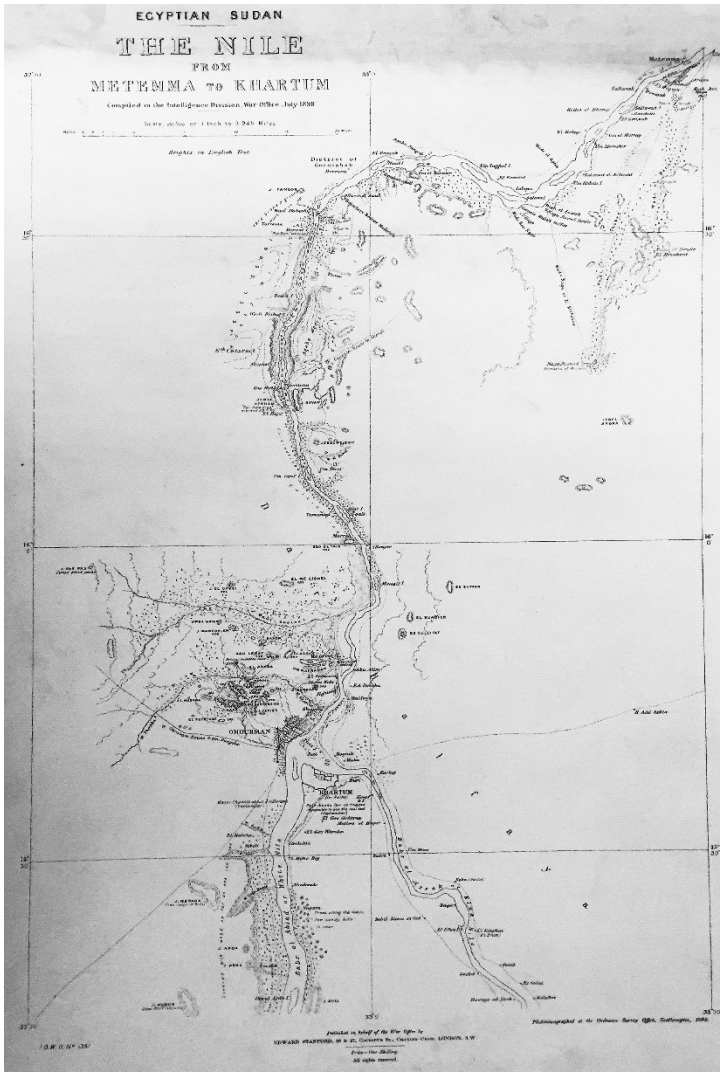

Figure 3-6 The Nile from Metemma to Khartum, 1898, Intelligence Division, War Office, British National Archives, M.P. HH413.

By 1933, a different mode of analysis has begun to take hold. Between the wars, imperial officials tended to become more concerned with good governance over pure extraction of resources, and colonial Africa also became an important site for the production of new knowledge.[48] The map shown in **figure 3-7** was part of a report on Khartoum's history and development, and as such is clearly more focused on the three cities around the banks of the Nile. Khartoum North did not exist in 1898, and is set out in some detail in this new map. It was founded where the railway line at first ended, before the building of a rail bridge over the Blue Nile. The prime purpose of the new development was as a servicing area for the railway, so the set of buildings here would be rather like Steevens' description of Wadi Halfa: a mixed array of warehouses, sheds, workshops and so on, as well as housing for engineers and workers. After the

[48] Helen Tilley, *Africa as a Living Laboratory: Empire, Development, and the Problem of Scientific Knowledge, 1870-1950* (Chicago/London: University of Chicago Press, 2011); for Africa's place in the global production of urban planning models see Bigon and Katz, *Garden Cities and Colonial Planning*; and in architecture see Crinson, *Modern Architecture and the End of Empire*.

Figure 3-7 Plan of Khartoum District from Memorandum on the Layout and Development of Khartoum, Khartoum North & Omdurman by Edwin Sarsfield-Hall. Sudan Archive, University of Durham 679/1/1-105.

building of the rail bridge, the line was extended around the south of Khartoum, creating a new spatial division between the grid layout north of the line and the informal settlements to the south. In this map, there is no sign of the latter, the town seems almost entirely contained within the rail lines. Colonial officials had sought to keep Khartoum for major stone buildings, to make it the image of a true colonial capital by clearing away temporary structures and homeless people.[49] Over the decades, this process would drive new growth to the south of the city, as informal settlements were extended beyond the city's notional limits. One can speculate that this might already have begun in the 1930s, or take the map at face value and assume that those expelled from the capital were largely ending up in Omdurman. The latter is shown as both larger and denser than Khartoum, with some areas as undifferentiated crowds of buildings and only one quarter having a clear street pattern.

The divide between the colonial city of Khartoum, the industrial town of Khartoum

[49] E. A. Stanton, 'Khartoum Province', *Reports of the finances, administration and condition of the Sudan*, 1902, 312.

North, and the densely populated Omdurman, stands out clearly on the map. In recent years there has been a strong move towards highlighting the connections between White Town and Black Town in colonial urbanism.[50] Each area constructed the other, for whereas Europeans wielded power from White Town their day-to-day essentials depended on people and trade flowing into the area to supply food, labour and goods. Many also employed servants who would not otherwise have been permitted to enter the notionally White space, let alone live there as they often did. Much of this also applies to Sudan's capital region. What is distinctive here though, is the clear geographical split between the three cities, and this is written into the environment in water and rails. The Nile and the railway give spatial expression to the aim of separating the European from the African, making it easier to maintain a distinction between different city zones. The river becomes part of the infrastructure of urban space.

The planners who developed and elaborated on this system are also important sources on the urban history of the region. While managing the city, they also took time to define its past. The following section interrogates the role of historical writing for colonial town planners.

IV. Planner historians and the generation of knowledge

In 2003 Bushra Babiker published a working paper titled 'Khartoum: past, present and the prospects for the future', an updated version of a lecture originally given 1997.[51] The title deliberately echoed that used by Edwin Sarsfield-Hall in a talk to The Town Planning Conference held at Welwyn Garden City in 1933.[52] Babiker is an architect, planner and former professor at the University of Khartoum, where he was director of the Institute for Urban Studies. Sarsfield-Hall was governor of Khartoum from 1929-1936, and wrote an extensive account of the city's

[50] Beverley, 'Colonial Urbanism and South Asian Cities'; Bissell, 'Between Fixity and Fantasy'.
[51] Babiker, 'Khartoum'.
[52] Sarsfield-Hall, 'Khartoum: Past, Present and Future'.

development. Both writers give historical accounts that are shaped by the concerns of planners, and in this they write within a tradition that ran throughout the twentieth century and continues today. Imperial planners sought to master the past as well as the future of Sudan's capital region. Indeed, they were so keen on this that it seems we must imagine the creation of a past as being an essential part of their efforts to create the future.

In this section, I examine the early years of this discourse, through an analysis of historical accounts produced by William McLean in the 1910s and the later work of Sarsfield-Hall. I will show that change has been gradual over time, allowing much of McLean's early claims to persist in far later historical work. In particular, the focus on Khartoum at the expense of Khartoum North and Omdurman, and the links between all three, creates a limited understanding of the historical dynamics that created Sudan's capital region.

Most accounts of the history of the region go something like this: the confluence of the Blue and White Niles is a site of vital strategic interest to any power in Egypt because of the importance of the Nile water supply. It was for this reason that Khartoum, the Egyptian outpost founded there in the 1820s, became the capital of the expanding Egyptian possessions to the south. Britain became the recognised power in Egypt in the early 1880s, taking advantage of Egyptian debt to secure the increasingly vital Suez Canal. The imperial power had little interest in Sudan, and the latter expelled the Egyptian officials who had governed it to become an independent state in the mid-1880s. The fall of Khartoum after a doomed defence by General Gordon was seen as a moment of national humiliation for Britain, and tales of his heroic obstinacy became classics in the growing genre of imperial literature. Independent Sudan had its capital across the river in Omdurman, again an expansion of a military site. In the late 1890s, British and Egyptian troops again conquered Sudan, and a unique system of joint rule was created. Although in theory

Sudan was to be run for the benefit of Egypt, British officials were given all executive power, under the guidance of the representatives of the imperial state in London and Cairo. Khartoum was rebuilt as a new capital, and the third city of the region, Khartoum North, began to develop around the first railway terminus. Readers will recognise the details here from the start of this chapter.

This has been the conventional history of Khartoum, which can be found repeated in one form or another in almost every lengthy text dealing with the city's history or planning. There is usually a slippage between the use of Khartoum for the capital itself, or for the whole urban region inclusive of the three cities. Attempts to be more rigorous about the distinction go back at least as far as Hamdan in 1960, but have not been consistently adopted by historians.[53] Among the most consistent features of the conventional history of Khartoum that I have rehearsed above is that Khartoum North appears as a fairly minor part of the story of two rival capitals. Even when it comes to describing Omdurman and Khartoum, it is usually the latter that comes through much more clearly. The British planners of Khartoum were among those who shaped this historical discourse.

In the early 1910s, William H. McLean wrote two conference papers that refer to urban development in the Sudan capital region. The first, 'The Planning of Khartoum and Omdurman', was presented at the Town Planning Conference of 1910, the second appeared in *The Town Planning Review* in 1913.[54] The later article was broader in scope, and titled 'Town Planning in the Tropics, With Special Reference to the Khartoum Development Plan'. McLean had served as Municipal Engineer in Khartoum, and would go on to design town plans for Alexandria and Jerusalem. He later gathered his experiences together in *Regional and Town Planning,*

[53] Hamdan, 'The Growth and Functional Structure of Khartoum'.

[54] McLean, 'The Planning of Khartoum and Omdurman in the Earliest Period of British Rule [1910]'; McLean, 'Town Planning in the Tropics, with Special Reference to Khartoum'.

In Principal and in Practice.[55] This work is notable for his efforts to draw parallels between planning in the Empire and in Scotland, but it is his earlier conference papers that concern us first. I want to draw attention to some elements of McLean's account that remain embedded in many later histories of Sudan's capital region, the first of which is his statement that:

> The history of Omdurman practically commences with the fall of Khartoum, and, as already mentioned, much of the building material used in its construction was obtained from the ruins of Khartoum.[56]

The reader is presented with a history in which the only way for Sudanese groups to create a new city was to reuse materials from the Egyptian-founded Khartoum. This impression is muddied by the claim in the following paragraph that Omdurman began as 'a countless agglomeration of straw huts, but these were ultimately replaced by the mud houses which are still to be seen'. It is not entirely clear why either straw or mud constructions would have relied on the ruins of the previous capital. While this specific detail is generally absent from more recent accounts, the impression that only external players exist in the development of Sudan's Capital Region persists. McLean's representation of Omdurman as largely an unplanned mess has been challenged by Adil Mustafa Ahmad in a series of articles at the end of the twentieth century, in which he built on Hamdan's earlier work to enhance our understanding of the functions of the three cities of Greater Khartoum.[57] Ahmad, however, was predominantly interested in the later twentieth century and only somewhat complicated readings of the British period. The fragility of McLean's account is revealed by another of his contradictions on Omdurman: while often talking about the city as unplanned or disorganised, McLean also criticises the way in which the Khalifa created broad roads by moving existing homes. This is very

[55] McLean, *Regional and Town Planning*.

[56] McLean, 'The Planning of Khartoum and Omdurman in the Earliest Period of British Rule [1910]'.

[57] Ahmad, 'Housing Submarkets for the Urban Poor'; Ahmad, 'The Neighbourhoods of Khartoum: Reflections on Their Functions, Forms and Future'; Ahmad, 'Khartoum Blues'; Hamdan, 'The Growth and Functional Structure of Khartoum'.

much the process by which the grand streets of European capitals were also created, and when McLean tells us that the British regime will create new roads simply by banning repairs or new building along the line of a planned road, the contrast becomes almost comical. McLean is trying to present policies that were created to save money as being ideal.[58]

On the specifics of colonial planning, McLean wrote that:

> The principals of Town and House Planning require certain modifications in the tropics, and the problems are intensified by the fact that usually a portion of the population are not in their natural zone, and are, therefore, not in adjustment with their environment. Special consideration and provision has to be made if this portion of the population is to enjoy even a fraction of the comfort of the native population who are adjusted to the climatic conditions.[59]

A focus on European 'comfort' in planning African cities was, by this logic, nothing to do with power but rather a response to the effects of climate on White health: 'the direct effect of tropical light on such men is injurious, causing nervous and other diseases,' McLean informs us. The driving principal of planning in the tropics is, therefore, to create zones that can keep Europeans healthy as much as possible. Bear this in mind as we move to discuss Sarsfield-Hall's understanding of the principles of town planning.

Edwin Sarsfield-Hall was governor of Khartoum from 1929-36, and began compiling details on the city's history and development during that time. Attempts to produce a publication from his research came to nothing, but the material he prepared has been preserved in Durham University's Sudan Archive, allowing us to view how ideas had moved on in the twenty years since McLean's conference papers.

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[58] The same approach was taken in Zanzibar, where masterplans that were never implemented nonetheless changed the cityscape by preventing building in areas that were notionally roads. See Bissell, *Urban Design, Chaos, and Colonial Power in Zanzibar*.

[59] McLean, 'Town Planning in the Tropics, with Special Reference to Khartoum'.

Sarsfield-Hall opens his account with a claim about the purpose of town planning:

> Speaking broadly, the principal object of town planning is the combination of satisfactory public health and sanitary conditions with the creation and preservation of amenities in such a way as to secure the highest possible standard of well being for local inhabitants. It is not an exact science: town plans must of necessity vary with the character and needs of the people, climatic conditions, geographical position, and the need for future development, and after the problem of the original layout of a new town has been solved, subsequent developments are inevitably attended by fresh and unforeseen difficulties peculiar to each stage of growth.[60]

There is little here that planners today would take immediate issue with. McLean's explicit support for racial segregation, and the idea that cities fundamentally existed to support a European lifestyle, have been replaced with principals that at least sound more egalitarian. The phrase 'for local inhabitants' marks a clear difference in rhetoric from McLean's work, repositioning the planner as the guardian of the health of an entire population.[61] The specific concern with protecting elite, European health has expanded to include an apparently undifferentiated local populous. I don't wish to sound naïve: Edwin Sarsfield-Hall should not be read as a champion of subaltern liberation. Nonetheless, there is a clear change here in the stated aims of imperial town planning. The performance of imperialism by this later period seemed to require a closer concern with its subjects, rather than with the protection of White bodies.

Something of this change can also be found in McLean's later writings, which by the 1930s had become heavily technocratic. In *Regional and Town Planning, In Principal and in Practice* he moves between urban and regional scales, and sees the principals involved as being more or less the same whether one is speaking of Glasgow,

[60] Edwin Sarsfield-Hall, 'Memorandum on the Layout and Development of Khartoum, Khartoum North and Omdurman', 1933, SAD 679/1.

[61] The phrase 'for local inhabitants' is actually a correction in the draft document from 'to the local inhabitants', but this change seems to be about grammar not meaning.

Scotland and Britain or of Khartoum, Sudan and the Nile valley.[62] The population, rather than being carefully distinguished by race, are treated as a statistical mass to be analysed according to productivity, consumption, and other economic measures. This shift in the technocratic discourse detached planning from the specifics of imperial ideology, allowing many of these ideas to persist into the postcolonial era.

Bushra Babiker's paper, written over six decades after Sarsfield-Hall's research, appears at first glance to resemble academic histories far more closely than the early works we have been examining.[63] The flurry of endnotes, the fact that the research was carried out under the auspices of a prestigious fellowship at Durham University, the scholarly tone of the author all contribute to a sense that here is something with some significant intellectual content. And, of course, Babiker is not speaking as a representative of the colonial planning system. When it comes to the content there are important differences as well: whereas McLean and Sarsfield-Hall barely mention Tuti Island or the pre-Egyptian history of Khartoum, Babiker spends some time setting out the long history of settlement in the capital region. The empty history presented by the writers of the colonial era is not simply reproduced here. Indeed, this is an important part of Babiker's contribution to the literature, and he goes far beyond other authors in providing a real sense of deep history in Greater Khartoum. When he reaches the modern era, however, it becomes clear that there is a colonial residue in his argument.[64] He refers to the early Egyptian Khartoum, after 1835, as 'a beacon of civilization within the surrounding wilderness.'[65] His account of Egyptian, colonial, and independence era Sudan retains the model of order promoted in McLean's technocratic writings, in which any urban problem can be solved through the clear mind of the planner with the strong hand

[62] For more on this later work see chapter six.

[63] Babiker, 'Khartoum'.

[64] Perhaps a kind of haunting, as discussed in Nivi Manchanda and Sara Salem, 'Empire's H(a)unting Grounds: Theorising Violence and Resistance in Egypt and Afghanistan', *Current Sociology*, 27 January 2020, https://doi.org/10.1177/0011392119886866.

[65] Babiker, 'Khartoum', 11.

of the state. This is understated in the historical account, but becomes clear in his concluding section on the future:

> What is in store for Khartoum? Khartoum's future depends largely on its decision maker's ability to employ the right mix of government planning and private initiatives. In practical terms, one could begin the same way Gorringe, the Royal Engineer entrusted with the reconstruction of the abandoned city did. He began by starting with a comprehensive rehabilitation and comprehensive overhaul plan. This plan…was able with meagre funds and with less advanced capabilities at their disposal, to overcome the problems of a devastated city and to create the model – albeit colonial – of the town we all came to know and like so much. Possibly with the advantage of one-hundred years hindsight, technology and the benefit of a dynamic wholesome city, the same results may be achievable within half that period.[66]

What are we to make of this claim that it is the colonial model that may hold solutions to the urban challenges of the twenty-first century? What might be meant by this claim that 'the same results may be achievable'? The forced expulsion of people from Khartoum, whose wooden homes were torn down to keep the space suitable for Europeans, is noticeably absent from Babiker's history. People, in fact, are not present enough, obscuring one of the main challenges to urbanism in Sudan's capital region today: population growth. An 'abandoned city' this certainly is not. The colonial approach, in which Omdurman was the population centre and Khartoum proper a sort of display cabinet of power, hardly remains convincing now that almost two million people live in and around Khartoum itself. This is not to say that contemporary planners should not seek lessons from the history of a place, even from colonial regimes, but it is essential to be clearheaded about the kinds of lesson one can expect to learn. There is nothing in the urbanism of Kitchener, Gorringe and McLean that is intended to effectively manage such a large metropolis. Not to mention the challenges that simply could not have been foreseen at the

[66] Babiker, 18.

dawn of the twentieth century, such as climate change or the importance of internet-based technologies.

What do planners seek to do by writing histories? William McLean was an engineer, Edwin Sarsfield-Hall was a governor, and Bushra Babiker is an architect. All of them have written on the history of Khartoum, while also seeking to play some role in its future. All are engaged in a rush toward the future that leads to their vision of the city colouring and indeed obscuring their reading of its past.[67] To McLean, Khartoum could be a site of healthy European habitation isolated from the dangers of Omdurman; to Sarsfield-Hall, rational planning could be effective for all its inhabitants; while for Babiker, the past is a repository of possible solutions and, in some ways, also somewhere to return to. In taking up this position he brushes over much of what was unpleasant about colonial urbanism, seeing any weaknesses it might have had as essentially rooted in lack of funds rather than extractive intentions. Each writer seeks to position the present of the city in order to expand upon its future, using history as a servant of urban design. In itself this may be no bad thing, but it is clear that the pursuit of the future risks damaging the delicate, sensitive work of assembling the past.

By establishing historical narratives that emphasised certain aspects of urban developments over others, imperialists were able to encourage and embed specific ways of imagining Greater Khartoum. Raising a clean, ordered new capital on a site left derelict by Mahdist misrule was one way of presenting the history of Sudan's capital region under the British; another might be to emphasise the displacement of ordinary people, the neglect of Omdurman, where far more people lived, the ways in which the movement of troops underpinned much of Khartoum's layout. By providing detailed accounts of imperial urbanism from the point of view of the

[67] That colonial governance was, in essence, future oriented has been noted in Larkin, *Signal and Noise*, 25. This makes the specific role of history-writing within these regimes all the more intriguing.

colonisers, writers like McLean and Sarsfield-Hall ensured that their view of history was the first written, that it became the standard way of reading urban archives. This is not to say that subsequent work has not shifted our understandings and provided glimpses of other histories, but to emphasise that here we are encountering history-writing as an imperial practice, as another way of ordering the world.[68] Just as urban form holds traces of empire, so does it representation in historical writings. The next section moves from these to an analysis of the built environment itself, and how that also sought to present a vision of imperial power.

V. The capital region as an imperial theatre

Architecture, throughout this thesis, is being approached not so much as a collection of works of art, but more as a series of attempts to structure space, a series of interventions in the environment, broadly conceived. It is for this reason that we have not begun with buildings but with military invasions, landscape imaginaries, railways and history writing. The space of Sudan's capital region has begun to emerge, in layers soaked in blood and water, bound with rails. The actual buildings created during the years of British rule have been mentioned only in passing. It is time to examine these and to begin to understand how they emerge from the trajectories already sketched.

As already remarked, the British were primarily interested in Khartoum, at the expense of Omdurman. Khartoum North had a purely practical function in imperial conceptions of how Sudan's capital region ought to function, as the centre of industrial activity primarily servicing the railway; Omdurman would serve as the 'native' quarter that was a feature of most colonial cities.[69] The only area to be granted fully urban significance – modern, civilised, European, clean, replete with

[68] An engaging overview of the academic practice of imperial history in the UK can be found in Richard Drayton, 'Imperial History and the Human Future', *History Workshop Journal*, no. 74 (2012): 156–72.

[69] Recent work has done much to reveal how the two sides of the imagined black and white colonial city were mutually constructive. See Beverley, 'Colonial Urbanism and South Asian Cities'; Bissell, 'Between Fixity and Fantasy'.

'the furniture of civilisation' – would be Khartoum. The specific history of the British in the region made their interests even more precise than this: Khartoum should be a demonstration of power worthy of the legacy of Gordon. In revenge for the latter's death, the city he once governed should be made into a beacon of civilisation.

Except of course that such things cost money. The Condominium Agreement gave Britain a largely free hand in governing Sudan, but passed the great bulk of funding responsibilities over to Egypt. The intention was that Sudan should achieve budget surplus as rapidly as possible and not be a burden on either of its notional rulers. The rebuilding of Khartoum, then, had conflicting goals: firstly, it should create a legacy of urban grandeur in commemoration of Gordon as the great imperial hero; secondly, it should be as cheap and quick to build as possible. Unlike the creation of New Delhi some years later, this project was not a great enterprise of the British state.[70] Nonetheless, what was built was, by those involved, imagined with all the fervour of a religious mission. British officials in Sudan were determined to carve out an imperial space that would honour the fallen and stand as a sign of British power. The centre of Khartoum thus became a site so heavy with symbolism that it may be reasonable to describe it as a theatre of imperial display.

How did a visitor such as Emily Hornby experience this theatre? What was shown to, and hidden from, the English holiday-maker coming up the Nile for a change of air? Hornby travelled to Sudan's capital region on the same rails that had carried Kitchener's troops.[71] Her first view of Khartoum was from Halfaya, the site of what was in the process of becoming Khartoum North. She looked across the Blue Nile to see an 'exceedingly pretty' view of tree-lined avenues, houses with gardens, and

[70] New Delhi has been described as 'the most magnificent as well as the most ambitious architectural project ever undertaken by a British government' by Gavin Stamp, 'Lutyens, India, and the Future of Architecture', in *Lutyens Abroad: The Work of Sir Edwin Lutyens Outside the British Isles*, ed. Andrew Hopkins and Gavin Stamp (London: British School at Rome at the British Academy, 2002), 191.

[71] Emily Hornby, 'A Tour in Egypt, 1904-5', SAD 880/10/169.

large government buildings.[72] She thought the house that she was staying in 'very Eastern in appearance' from the outside, and 'rather like an Indian house, I should think' in construction.[73] She gives us an overview of the developing layout of the city, noting that government residences and the like were in Khartoum, facing the Nile, while the 'commercial part' is north of the river, 'i.e. the Government workshops and stores, dockyards, Artillery Station, Custom House and Railway Station.'[74] Hearing the sounds of military exercises, Hornby reflects on how recently the city had been a war-torn ruin: 'Peace, order and comfort reign at Khartoum now, and it is pleasant to us to feel that this change had been effected by the work of the English.'[75] Only a few years after Kitchener's conquest, the built environment was already being used to cover over the blood on which it was constructed.

As there were not funds for lavish building work, the architectural representation of British power had to focus on a small number of key buildings. The Governor General's Palace Hornby describes as 'a fine white stone building', built on the same foundation as Gordon's residence had stood.[76] Gordon College was 'a fine red-brick building with long corridors outside.'[77] These buildings were on neighbouring sites on the riverbank, both set amidst expansive grounds. The college was funded by £135,000 raised from the British public, and had a key place in the imagined colonial mission: the death of Gordon was to be avenged by bringing 'civilised' education to the Sudanese. The college's long corridors had pointed arches that overlooked the gardens, and a similar arrangement with rounded arches can be seen at the governor-general's palace. In both cases, a visitor in the gardens could look up to

[72] Hornby, 'A Tour in Egypt', SAD 880/10/175-6.
[73] Hornby, 'A Tour in Egypt', SAD 880/10/177.
[74] Hornby, 'A Tour in Egypt', SAD 880/10/182.
[75] Hornby, 'A Tour in Egypt', SAD 880/10/177.
[76] Hornby, 'A Tour in Egypt', SAD 880/10/182.
[77] Hornby, 'A Tour in Egypt', SAD 880/10/183. For more on the architecture of the college see Ashley Jackson, Buildings of Empire (New York: Oxford University Press, 2013), 202-3.

impressive architectural form, whereas one strolling through the building could look down onto the order of the gardens below. Hornby was told that of the £2,000 annual allowance for the palace and its gardens, £1,500 was spent on the garden; the grass had 'to be constantly flooded.'[78] In these designs, architecture and landscape gardening work together to provide a vision of the civilisation being brought by British rule.

Figure 3-8 Sir Stewart Symes on the main balcony of the Governor-General's Palace, 1930s. Papers of Sir Douglas Dodds-Parker, Magdelene College Oxford, P2/3/1P/113.

Figure 3-9 Gordon College, 1936. US Library of Congress, call number LC-M31- 8080 [P&P], URL https://www.loc.gov/pictures/item/mpc2004000040/PP/.

A new building was added to the imperial theatre set after Hornby's visits. Nestled in the palace gardens, and only built haltingly over several years, All Saints' Cathedral was the first Anglican church in Khartoum, providing space for Church of England services that were previously held in the palace. On laying the foundation stone in 1904, Princess Henry of Battenberg said that the church (it was only designated as a cathedral some years later) was being built as a 'a sign of peace not a menace, not to wound but to heal'.[79] The same speech compared the British – 'scattered over the face of the earth' as conquerors – to the Jews, similarly dispersed but as the victims of tyrants. She declared that 'Christian tolerance, justice, liberty and fair dealing' were

[78] Hornby, 'A Tour in Egypt', SAD 880/10/184.

[79] Preached at Khartoum on the occasion of the laying of the foundation stone of the new Church by H.R.H. Princess Henry of Battenberg, SAD 849/3/2-5.

the perfect revenge for the death of Gordon. The speech drew the building of the church into the narrative of British imperial mission in Sudan and beyond.

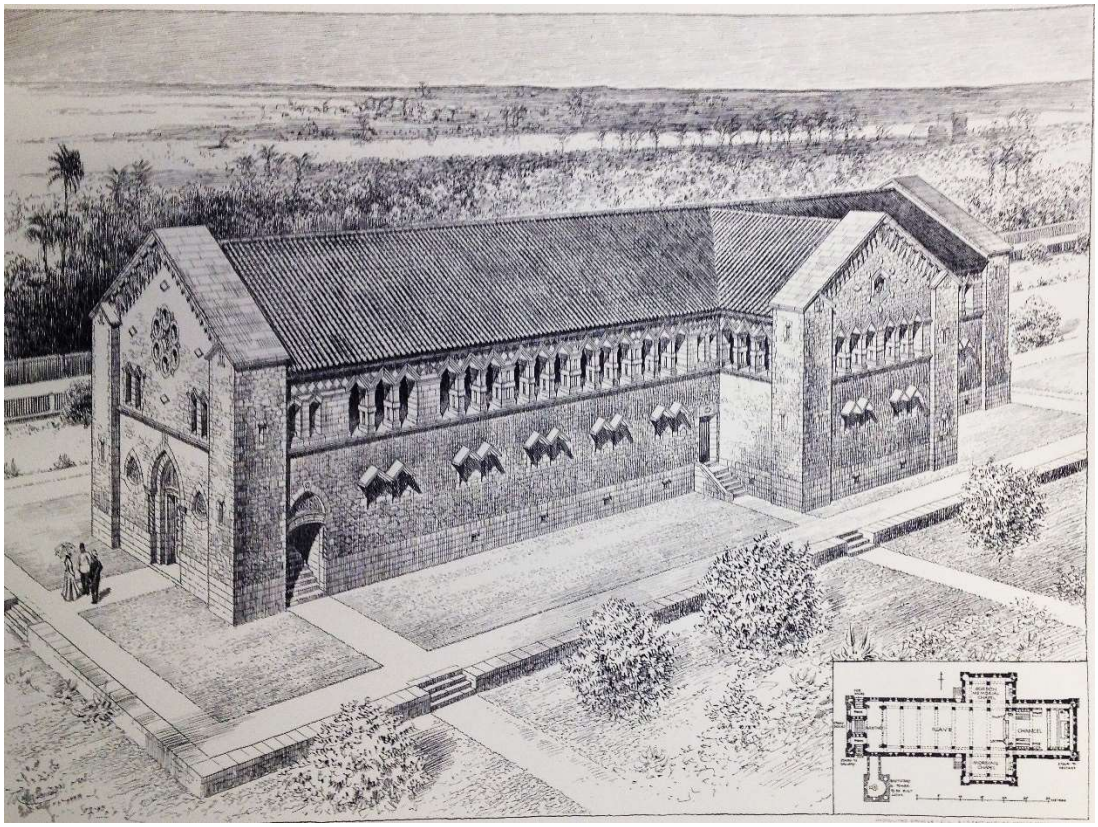

Figure 3-10 All Saints' Cathedral, Khartoum. Used in the Royal Academy Exhibition 1909. RIBA Archives, Victoria and Albert Museum Reading Room, PA 1093/LUT RAN II/N/5.

Contemporary reviewers were unsure how to respond to the building's architecture. The German-Scottish architect Robert Weir Schultz came from the arts and crafts tradition, and emphasised the importance of the building yard as a site of design and creation, rather than simply the place where an architect's vision was given form.[80] As mentioned in the introduction to this thesis, he was deeply interested in the earth under the church, and several details of the design are particular to its location: to avoid doors being blocked with sand, the whole structure was raised, and the doorways themselves were raised still further; the windows were small and heavily shaded to keep out the sun; as the soil changed a

[80] For an overview of his work see Ottewill, 'Robert Weir Schultz (1860-1951)'.

great deal depending on the season, large foundations were built, and to ensure that these remained stable Schultz produced designs that allowed the main body of the church to be built before its tower.[81] As it happened, this latter step was also useful as it allowed the main church to be completed relatively cheaply, the tower not being built until the late 1920s. There was a distinct horizontality to the building without the tower, even though it featured some gothic details. *The Builder* called it 'original and interesting, like nothing else one has seen in the way of a church and *The British Architect* celebrated its unusual blending of styles, saying that 'For want of a better definition we might perhaps call the design Sudanese'.[82] Robin Cormack takes a similar view in his recent article on the building, viewing it as an intriguing cultural hybrid.[83] On the other hand, *The Manchester Guardian* felt that the church 'fails in the important quality of mass, and is altogether unimpressive, although Mr. Schultz Weir has no doubt given many an interesting touch to the detail.'[84] What all agreed on was that the church did not easily fit into a straightforward historicist category; but as Schultz himself described the emphasis on style to be a 'handicap' to true building craft, this is not surprising.[85] Among the key buildings of the imperial theatre of Khartoum, this was modest in scale, and its small windows and dim interior make it less a space of display and more an intimate reimagining of an English parish church. Nonetheless, placed within the gardens of the governor-general's palace the building made a definite statement about who controlled urban space, about which groups were close to power.

In contrast to the carefully managed architectural display of Khartoum, Omdurman and Khartoum North were little considered. The latter, a collection of warehouses and production sheds connected to the railway, could be thought of as a Sudanese

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[81] The architect himself wrote a brief account of the building that touches on all these issues, see Weir, 'The Cathedral of All Saints, Khartoum, Sudan'.

[82] *The Builder*, 8 May 1909; 'Cathedral at Khartoum', *The British Architect*, 5 March 1909.

[83] Cormack, 'Unity Out of Diversity?'

[84] 'Architecture at the Royal Academy', *The Manchester Guardian*, 11 May 1915.

[85] R. W. Schultz, 'The Handicap of Style', letter to the editor published in *Western Mail*, 29 December 1904.

equivalent to Wadi Halfa. Some colonial engineers did live there, in houses facing Khartoum across the Blue Nile, but there was no structuring of space around a clear plan as in the capital. Local people lived in homes of straw and mud, put up wherever they wished. Such structures were cleared out of Khartoum, to make space for visions of colonial order, but there was little or no control over building in Omdurman or Khartoum North. The new town was, therefore, a mix of railway sheds, warehouses and production buildings; a few colonial buildings such as homes, a railway station and a post office; and the dwellings of Sudanese people drawn there to work. Omdurman largely consisted of similar local buildings, though as we have seen the ruins of the Mahdi's tomb were also important in the production of an image of British power. Thus, Khartoum was the main stage of the imperial theatre, Omdurman featured as an important set, and Khartoum North was largely thought of as a backstage, needed only for purely practical matters concerning transport and production.

Conclusions

The various histories brought together in this chapter have helped to reveal the multiple ways in which the imperial regime sought to master Sudan's capital region. The area took its fundamental form from riverine desert environment. The essential division of its main spaces follows the river. This is then overlaid with the railway, first driven by the logics of war and only later by more peaceful aims. These divisions in space were reinforced through imperial policies that pushed Khartoum to become a site for the display of power, while much of the more practical business of being a city, such as housing people and managing infrastructure, was outsourced to Omdurman and Khartoum North. The vision of an imperial city presented by officials to visitors and readers of their histories focused on Khartoum because this was a space that was designed as a display cabinet for colonial order, or a theatre of imperial power. War, dust and floods were written out of the urban space and of official histories, to create a cityscape that was as much as possible

disconnected from the historical and geographical forces that had produced it. Omdurman and Khartoum North were produced as, respectively, a place for the African other and for the dirty processes of colonial engineering. Although the relationship between the three was acknowledged, it was Khartoum that loomed large in the colonial imagination. The other two cities of the capital region were merely the backstage to its imagined glory.

The colonial city as a spectacle of imperial power has broader implications for how scholars think about the built environment. The ways in which this spectacle were produced were not only about physical space: cultural production of ideas through journalism, travel writing, historical accounts, photography etc. also contributed to this vision of mastery. The power and role of architects, planners and politicians can be more fully understood alongside cultural forces such as literature and material phenomena such as flooding than if these elements are all kept separated out. Bringing together diverse sources and modes of analysis enables us to grasp some of the sheer complexity of this production of the city. What emerges is an urban history that is alive to the cultural and material production of space, to the intersection of actants that brings the urban scene its vibrancy. The following chapters take up this challenge in other sites along the Nile, following the flow of the river that defines the region.

Chapter 4

Mastering the Nile? Confidence and Anxiety in D. S. George's Photographs of the First Aswan Dam, 1899-1912

Foreword

When Emily Hornby toured the Nile valley in 1905-06, the first dam across the Nile had recently been completed at Aswan. Although she had heard of the 'devastation wrought by the dam', she was surprised to find that this had included the destruction of pine trees. On the human impact she noted:

> We hear the people about here say the dam has ruined them, all their ground capable of cultivation is now underwater; it seems a great pity, but I suppose it has benefitted the whole of Egypt below Assouan [Aswan], at least one hopes so.[1]

There is a striking tension here between 'I suppose' and 'one hopes'. The assumed good work of empire comes into conflict with evidence on the ground, and Hornby can only preserve hope by imagining a greater good that lies elsewhere. Any recognition that imperial modernity might not be a benefit is quickly suppressed, but leaves a haunting trace in her phrasing. This chapter explores similar echoes and tensions in visual sources.

What follows is adapted from an article in *Environmental History*.[2] Spellings have been brought in line with the rest of the thesis and two additional images are included here, but the structure has not been altered. Material that would simply be a repetition of what already appears in earlier chapters has been removed. An afterword knits this article into the fabric of the wider thesis.

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[1] Hornby, *A Nile Journal*, 82 and 86.15 and 17 Jan. 1906. By 'below' Hornby means downriver, which is to say northern Egypt. In a similar fashion, this area is sometimes known as Lower Egypt, with Upper Egypt to the south.

[2] Samuel Grinsell, 'Mastering the Nile? Confidence and Anxiety in D. S. George's Photographs of the First Aswan Dam, 1899–1912', *Environmental History* 25, no. 1 (1 January 2020): 110–33, https://doi.org/10.1093/envhis/emz078.

I.

The British officials who governed Egypt in the late nineteenth and early twentieth centuries believed they were there to straighten the country out.[3] This aim included changing the character of Egyptians, imposing clock-time, mapping land ownership, and sweeping desert dust from the streets.[4] The project of remaking Egypt involved not only political and social changes, but extensive management of the environment. Creating an Egyptian economic system that would benefit the colonial power depended on expanding agricultural output, and the engineering of the Nile was vital to this. Consequently, the waters of the Nile upon which Egypt depended needed to be made as regular as the railway, and as reliable as clockwork. The modern British Empire could not tolerate dependence on a fickle annual flood, and to move with the times, the Nile had to be dammed.[5] The central part of a new system of hydrological management came with the construction of the first Aswan Dam, designed to store floodwaters to feed the cotton fields of northern Egypt, between 1899 and 1902. Downriver, the waters it stored were channelled to agricultural land by barrages, but the Aswan Dam was the grandest part of this plan. It was the straight line that would discipline the waterscape of the Nile valley.

This chapter uses two series of photographs to seek to understand how the dam project was imagined within imperial ideology. Commemorative albums produced in 1902 and 1912 give accounts of the original building and later extension of the first Aswan Dam. The human and environmental changes created by large water management infrastructure have been an important topic in the emerging literature

[3] On the centrality of straight lines in colonial ideologies see Tim Ingold, *Lines: A Brief History* (Abingdon: Routledge, 2007).

[4] Cain, 'Character and Imperialism'; Barak, 'Egyptian Times'; Mitchell, *Rule of Experts*; Barak, 'Scraping the Surface'.

[5] On the centrality of hydrology to the British in Egypt see Tvedt, *The River Nile in the Age of the British*; and 'Hydrology and Empire: The Nile, Water Imperialism and the Partition of Africa'; for a contemporary account of hydrological imperialism in the Nile valley see Peel, *The Binding of the Nile and the New Soudan*.

on water history, one that has already reached to the Nile River.[6] Contemporary images of the Aswan Dam, however, remain an under-analysed resource, one that allows historians to see the world the engineers envisioned as much as the one they made. Indeed, by examining representations of this project, we can reach a better understanding of the place of hydrological engineering architecture in the imperial imagination.

The early twentieth century saw the emergence of a peculiar kind of imperialism in north-eastern Africa, in which most executive power was vested in the consul general in Cairo and the governor general in Khartoum, while the interests of the Egyptian economy were ostensibly paramount.[7] Projects such as the building of the first Aswan Dam were understood as part of a general effort to modernize the region. Modernisation, in effect, meant equipping its economy to play a specific role within the global mechanisms embedded in the British Empire.[8] But it also entailed a scientific satisfaction and national pride that attended controlling the world's longest river.[9] Understanding how British officials imagined the dam thus speaks to

[6] James Beattie and Ruth Morgan, 'Engineering Edens on This "Rivered Earth"? A Review Article on Water Management and Hydro-Resilience in the British Empire, 1860-1940s,' *Environment and History* 23 (February 1, 2017): 39–63, https://doi.org/10.3197/096734017X14809635325593; further examples of work in water history include: Acey, 'Forbidden Waters'; Kate B. Showers, *Imperial Gullies: Soil Erosion and Conservation in Lesotho*, Series in Ecology and History (Athens, Ohio: Ohio University Press, 2005); Verhoeven, *Water, Civilisation and Power in Sudan*; White, *The Organic Machine*; David Gilmartin, 'Imperial Rivers: Irrigation and British Visions of Empire,' in *Decentring Empire: Britain, India and the Transcolonial World*, ed. Durba Ghosh and Dane Keith Kennedy, New Perspectives in South Asian History 15 (Hyderabad: Orient Longman, 2006); Kelly et al., *Rivers of the Anthropocene*; Kaika, 'Dams as Symbols of Modernization'; Aditya Ramesh, 'Custom as Natural: Land, Water and Law in Colonial Madras,' *Studies in History*, November 13, 2017, 257643017736402, https://doi.org/10.1177/0257643017736402; on the environmental effects of the later Aswan High Dam see Gilbert F. White, 'The Environmental Effects of the High Dam at Aswan,' *Environment: Science and Policy for Stable Development* 30 (September 1988): 4; On the Aswan Dam itself, Timothy Mitchell has shown that the destruction of Nubian villages to make way for the dam, and the subsequent building of the new town of Gharb Aswan, had later ramifications in the search for an Egyptian national architecture, *Rule of Experts*, 184–96.

[7] See Chapter One: Introduction.

[8] Mitchell, *Rule of Experts*.

[9] There were numerous contemporary studies of the waters of the Nile and how they ought to be controlled, e.g. A. S. W., 'Hydrography of the Nile,' ed. William Garstin, *The Geographical Journal* 25 (1905): 75–77, https://doi.org/10.2307/1775985; J. C. Ardagh, 'Nilometers,' *Proceedings of the Royal Geographical Society and Monthly Record of Geography* 11 (1889): 28–38, https://doi.org/10.2307/1800840; Peel, *The Binding of the Nile and the New Soudan*; and this persisted even as the separation of the Nile valley into the nations of Egypt and Sudan began to gain currency -- see J. J. Craig, 'The Water Supply of Egypt and Sudan,' *The Contemporary Review* 127 (January 1925): 163–70.

a wider network of imperialist aims and assumptions, bound up with the purposes of the Empire in the Nile valley.

The completion of the dam in 1902 was marked by the publication of a celebratory photograph album that was circulated to leading officials and dignitaries in the region, including the Khedive in Cairo. A second album was produced to mark the extension of the dam between 1907 and 1912. Both included photographs by D. S. George, a local commercial photographer. The ways in which the dam was imagined and presented give us a means of analysing the relationship between imperial ideology and these kinds of large-scale water-management projects. The photographs were created to give a particular impression of work on the dam, as well as to record an important project for contemporaries and future generations. George had to carefully plan and set up each shot. But like every other artist, George was never in full control of his work. His photographs prove as valuable for the light they shed on what they communicate in spite of the intentions of their creator.[10] What place did the dam hold in the imperial imaginary? What was important about its building and extension? The albums offer insights into to these questions that might be missed in other sources. Although they are superficially similar, the albums differ in important ways that reflect the degree to which flaws in the project brought to the surface imperial anxieties that make the second album a less effective, more conflicted and fragmentary account of imperial triumph than the first. The albums thus demonstrate, with pictures rather than words, the difficulty of maintaining confidence in Britain's imperial mission, while struggling to control the natural environment of Egypt.

[10] For examples of using photographs to uncover the environmental imagination see Joel Snyder, 'Territorial Photography,' in *Landscape and Power*, ed. W. J. T. Mitchell, Second edition (Chicago/London: University of Chicago Press, 2002), 176–203; and Neil Maher, 'Shooting the Moon: How NASA Earth Photographs Changed the World,' *Environmental History* 9 (July 2004): 526-31; the photograph's peculiar status regarding authorship and object was often explored by Roland Barthes, for example in 'The Photographic Message,' in *Image-Music-Text*, trans. Stephen Heath (London: Fontana Press, 1977), 15–31; and *Camera Lucida: Reflections on Photography*, trans. Richard Howard, Vintage Classics (London: Vintage books, 2000).

Imperial anxiety is used here to mean an underlying sense of the fragility of the imperial mission, emerging from the constant running up against practical limits of (and local resistance to) dominant Western discourses and methods. This builds on the work of Ranajit Guha and John MacKenzie, who have underscored some of the anxieties generated by the empires of colonizing cultures. The connection between this kind of anxiety and specific issues of environmental degradation has been highlighted more recently by James Beattie.[11] But a close reading of the imagery of the first Aswan Dam enables a deeper understanding of how the ambitions of empire also created its anxieties. Indeed, anxiety and confidence can perhaps be read here as mutually constructive: the grand plan generates fear of its inevitable failure; the difficulties on the ground drive the desire for more ambitious planning.

In short, the images unveil a fragile ideology. However appealing the aim of complete domination might have been, it proved to be so far from anything that was possible that doubts understandably plagued it from the start. The changing themes of the photographs in each of the albums capture an attempt to wrestle with these tensions. The triumphalist images of the first cannot be matched by the second, because true success would not have involved extension and repair of the dam. The shifting themes of the albums demonstrate, it will be argued, a searching for meaning amidst thwarted ambitions.

II. Existing literature

The damming of the Nile was long in the planning and involved complex debates about archaeological preservation as well as hydrology. Although Aswan was an excellent candidate for the location of the dam, construction threatened the Island of Philae on which stood a renowned Temple of Isis and other Greco-Ptolemaic monuments. The debates surrounding this concerned whether engineering logic

[11] Guha, 'Not at Home in Empire'; MacKenzie, *Empires of Nature and the Nature of Empires*; Beattie, *Empire and Environmental Anxiety*.

should dictate the placing of the dam, or Britain had an overriding obligation to preserve the heritage of Greek civilization. A compromise between the two positions was reached whereby the dam would be lower than originally planned so that its reservoir would not flood the main temples. Casper Andersen has traced these arguments, contrasting competing visions of imperial mission: 'muscular modernization' vs 'paternalistic preservation.'[12] There was not necessarily consensus on what mastering the Nile might entail.

Much of the historiography on the dam has approached it as a piece of engineering. Norman Smith's exhaustive *A History of Dams* described the Aswan Dam as 'one of the finest dam-building achievements of all time', although his work shows little or no concern with dams as expressions of imperial and/or state power. Nonetheless, this older work is more alert than some recent histories to an important detail: that part of the function of the dam was to feed a steady flow to the Asyut barrage some 350 miles downstream. That these distant constructions were conceived of as part of one system is borne out by the inclusion of Asyut photographs in the Aswan albums.[13]

By tying this engineering structure to histories of cartography and agriculture to explore the role of historical imagination in producing Egypt's agricultural

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[12] Casper Andersen, 'The Philae Controversy—Muscular Modernization and Paternalistic Preservation in Aswan and London,' *History and Anthropology* 22 (June 2011): 203–20, https://doi.org/10.1080/02757206.2011.558580; David Gange, 'Unholy Water: Archaeology, the Bible, and the First Aswan Dam', in *From Plunder to Preservation: Britain and the Heritage of Empire, C. 1800-1940*, ed. Astrid Swenson and Peter Mandler, Proceedings of the British Academy 187 (Oxford; New York: Oxford University Press, 2013), 93–114.

[13] Norman Smith, *A History of Dams* (Secaucus, New Jersey: Citadel Press, 1972); on the history of the dam's building see Claire Jean Cookson-Hills, 'The Aswan Dam and Egyptian Water Control Policy, 1882 - 1902,' *Radical History Review* 2013 (April 1, 2013): 59–85, https://doi.org/10.1215/01636545-1965693; her thesis is a broader history of engineering in the Nile valley in this period 'Engineering the Nile: Irrigation and the British Empire in Egypt, 1882-1914' (PhD thesis, Queen's University [Canada]), 2013), http://search.proquest.com/openview/64d62c3788944b16e4adf0b2c5029c51/1?pq-origsite=gscholar&cbl=18750&diss=y; on imperial engineering and the place of the dam's designer William Willcocks within it see John Broich, 'Was It Really the "White Man's Burden"?: The Non-British Engineers Who Engineered the British Empire,' *Britain and the World* 9 (September 2016): 197–212, https://doi.org/10.3366/brw.2016.0237; John Broich, 'Engineering the Empire: British Water Supply Systems and Colonial Societies, 1850–1900,' *The Journal of British Studies* 46 (April 2007): 346–65, https://doi.org/10.1086/510891; and Canay Ozden, 'The Pontifex Minimus: William Willcocks and Engineering British Colonialism,' *Annals of Science* 71 (April 3, 2014): 183–205, https://doi.org/10.1080/00033790.2013.808378; for more on careers across the British Empire see Lambert and Lester, *Colonial Lives across the British Empire.*

geography, Jennifer Derr has pointed the way toward the kind of analysis offered here.[14] However, a close examination of a specific set of images facilitates an even more precise analysis of how representations of the dam might speak to broader questions about the place of environmental management in imperial conceptions of Egypt. In addition to revealing the importance of particular projects, images such as these can help us find the fractures and insecurities beneath the surface of bombastic modernity.

This chapter connects these works to the much wider literature on the relationship between imperialism, technology and the environment. The importance of rivers to empires has been emphasized in different ways by David Gilmartin and Terje Tvedt, the former more concerned with imperialism as a system of management, the latter with the geopolitical importance of water control. Environmental history raises the question of how to read relationships between material and cultural histories. Perhaps the most stimulating approach to this to come out of recent historical work is the idea of the eco-cultural network proposed by James Beattie, Edward Melillo, and Emily O'Gorman in 2014. This view takes seriously both human and non-human agents in the construction of particular historical realities, a call for a networked reading of environmental history that resonates with the work of Bruno Latour in sociology, Donna Haraway in feminist theory, Doreen Massey in geography, and Dipesh Chakrabarty in postcolonial theory. These scholars share a distrust of exploitative readings of human relationships with nature that read the latter as simply a passive victim, instead insisting that a river, or a landscape, or a chemical reaction can act in the sense of shaping events and realities. Further, they insist that human actions and culture are thoroughly embedded within these

[14] Jennifer L. Derr, 'Drafting a Map of Colonial Egypt: The 1902 Aswan Dam, Historical Imagination and the Production of Agricultural Geography', in *Environmental Imaginaries of the Middle East and North Africa*, ed. Diana K. Davis and Edmund Burke III, Ecology and History (Athens, Ohio: Ohio University Press, 2011), 136–57; on agricultural production more broadly see Scott, *Seeing Like a State*.

processes, rather than existing in a separate sphere.[15] What this way of thinking provides is a more flexible way to understand how people relate to technologies and objects, acknowledging the power of each without seeking to replace human agency with fully determinist materialism.[16] The earth and water of the Nile valley play as vital a part in this history as do engineers, laborers and political leaders. Examining imagery allows us to build on those insights by offering a valuable lens through which to view the complex web of material and cultural associations that were at play in the construction and representation of an iconic symbol of empire.

III. The albums' text and format

The photograph albums under discussion here contain written introductions as well as images. Insofar as these texts point to the official narratives which the photographs illustrate, they merit attention. William Garstin, Under Secretary of State for Public Works in Egypt, wrote the introduction to the 1902 album, which begins with an overview of the general situation before proceeding to a specific account of the dam, the Asyut Barrage, and the Philae Temples.[17] This sequence is not quite the same as the photographs, which instead are ordered: dam, temples,

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[15] Gilmartin, 'Imperial Rivers'; Tvedt, *The River Nile in the Age of the British*; Tvedt, 'Hydrology and Empire'; James Beattie, Edward Melillo, and Emily O'Gorman, 'Rethinking the British Empire through Eco-Cultural Networks: Materialist-Cultural Environmental History, Relational Connections and Agency,' *Environment and History* 20 (November 1, 2014): 561–75, https://doi.org/10.3197/096734014X14091313617406; see also their edited volume *Eco-Cultural Networks and the British Empire: New Views on Environmental History* (London/New York: Bloomsbury Academic, 2015), https://www.dawsonera.com/abstract/9781441108678; Latour, *Reassembling the Social*; Donna Haraway, *Primate Visions: Gender, Race, and Nature in the World of Modern Science* (New York and London: Routledge, 1989); and *Simians, Cyborgs, and Women: The Reinvention of Nature* (London: Free Association Books, 1991); Massey, *For Space* and *Space, Place and Gender*; Dipesh Chakrabarty, 'The Climate of History: Four Theses,' *Critical Inquiry* 35 (2009): 197–222, https://doi.org/10.1086/596640; while environmental historians have asserted the significance of non-human actors, they have generally been more inclined to maintain a distinction between natural and cultural spheres. See for example Donald Worster, 'Transformation of the Earth: Toward an Agroecological Perspective in History,' *The Journal of American History* 76 (March, 1990): 1087-1106; these traditions do share many concerns, however, and many individual historians draw on both, for example LeCain, *The Matter of History: How Things Create the Past*; for more on human relationships with technology and the environment see Thomas P. Hughes, *Human-Built World: How to Think about Technology and Culture*, Science.culture (Chicago/London: The University of Chicago Press, 2004); Paul R. Josephson, *Industrialized Nature: Brute Force Technology and the Transformation of the Natural World* (Washington/Covelo/London: Island Press, Shearwater Books, 2002).

[16] For a neo-materialist approach to some of these issues see LeCain, *The Matter of History*.

[17] 'The Nile Reservoir Works at Aswan and Asyut' (Egypt Public Works Department, 1902), Abbas Hilmi Papers HIL 455, Durham University Special Collections There are further copies of both albums in the Burndy collection at The Huntington Library in California, and in the British Library. I have worked from the copies at Durham, and it is from these copies that the images presented here are taken.

barrage – although the dam is the central focus in both. The shorter introduction to the 1912 album opens with grand claims about the success of the dam, the additional water it has provided, and the steadily increasing demand for more.[18] It describes the preservation of the Philae Temples as the 'one unfortunate objection' to the dam's extension, and goes on to detail the reasons this issue had not stopped the scheme, namely that the stones and underpinning of the Temples could withstand some submersion, and therefore that completely drowning them did not actually threaten their preservation. The rest of the text involves detailed descriptions of engineering challenges such as masonry cracking. The imaginary of the dam project here matches the way it is presented in the photographs of this album: it is largely a practical matter, building on early successes to ensure Egypt's supply of water. There is no mention of the fact that engineers had always wanted a larger dam, or of any possible link between the unusually low summer water flow that had been experienced since the dam was erected and the dam itself. Good news was connected to the dam, bad news an unfortunate coincidence.

The large landscape photographs that follow these written introductions are printed on heavy card. In the first volume especially, many of the images are carefully paired so that the two facing pages form a diptych on a shared theme. D. S. George's other extant works consist largely of romantic views of the Nile or the pyramids, clearly designed to appeal to tourists. It may be that he also suggested the ordering of the images in the albums, but sources are silent on the matter. Regardless, some of the ways in which the photographs relate to one another suggest a careful composition and selection. These albums speak to a particular discourse, in which control of the waters of the Nile was central to the creation of

[18] 'The Extension of the Aswan Dam 1907-1912' (Egypt Public Works Department, 1912), Abbas Hilmi Papers HIL 454, Durham University Special Collections. This source also mentions that the Egyptian government also earmarked £E60,000 for surveying and carrying out minor repairs on the site.

a modern Egypt.[19] To be sure, this was not simply a European obsession, having roots in the modernizing rule of Muhammed Ali in early nineteenth-century Cairo as well. Thus, water control could speak to an official Anglo-Egyptian set of concerns, a preoccupation with the creation of truly perennial irrigation in Egypt through what Sidney Peel called *The Binding of the Nile*.[20] The visual representation of the (supposed) realization of this project speaks to its key assumptions and its particular place within imperial discourses. Indeed, a thematic analysis of the photographs that follow highlights the particular model of imperial modernity expressed within these images, and the fractures within this worldview.

[19] I am using discourse in the sense of a set of related statements, ideas, and modes that provide a means of establishing truth value. I take it as read that it is through discourses that meaning is constructed. See Michel Foucault, *The Archaeology of Knowledge and The Discourse on Language* (New York: Pantheon Books, 1972).

[20] Peel, *The Binding of the Nile and the New Soudan*.

Figure 4-1 'Aswan Dam: Western Channel at commencement of work'. Reproduced from the Abbas Hilmi II Papers at Durham University Library by kind permission of the Mohamed Ali Foundation, HIL 455/5.

IV. Nature

The opening photograph of the 1902 album seems at first glance to be a vision of nature at a vast scale, dwarfing humanity **(figure 4-1)**. A sailing boat occupies the right foreground, set against an expanse of restless river. The currents surge and eddy, and it is hard to read in which direction the water is bound. Bits of rocky ground interrupt the Nile's flow. The tiny figures huddled in the boat do not give the impression of being ready to master these waters. It seems, rather, as if the river is their master.

Figure 4-2 'Aswan Dam from Upstream'. Reproduced from the Abbas Hilmi II Papers at Durham University Library by kind permission of the Mohamed Ali Foundation, HIL 455/18.

The background of the photograph, however, complicates this image of natural power. For along the river banks we can see signs of what is to come: buildings and machines lurk along the shoreline, housing the workers setting out to tame the river. The narrative of the first album is of these unruly waters being subdued by man and machine. The natural world is shown first in this raw state, before we witness it torn, channelled, and shackled. The majority of the photographs are concerned with technology, work, and the interaction between the two, but this is framed through representations of nature. The opening image is answered by photographs of the final dam, appearing as a new feature of the environment.

George's view of the completed dam from upstream **(figure 4-2)**, which appears later in the album, seems to deliberately echo the composition of the album's first photograph. Again, there is a boat in the right foreground, this time accompanied

by another just disappearing out of shot. These boats, however, sit upon waters that have been subdued by the dam that now looms over the scene. What was surging, undirected, uncontrolled is now calm, humbled, and altogether tame. The distinction between land and water is clearer, and the river seems reduced both in energy and scale. Whereas in the opening image even the direction of the water was unclear, here there is no such ambiguity. The most powerful feature of the scene is the firm, immovable dam, not the river.[21] The 1902 album is essentially a narrative from the untamed river to the mighty dam. It shows the Nile being transformed with confidence.

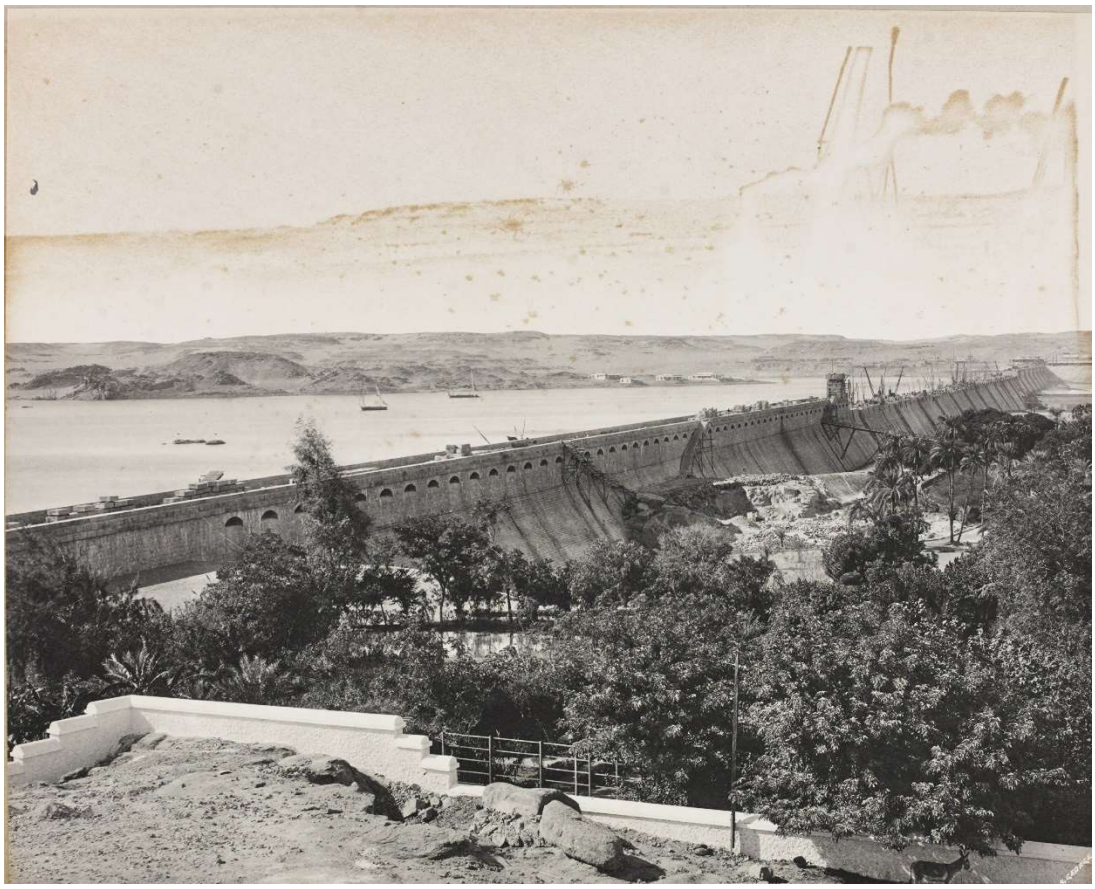

Figure 4-3 'Downstream view showing spillways'. Reproduced from the Abbas Hilmi II Papers at Durham University Library by kind permission of the Mohamed Ali Foundation, HIL 454/18.

[21] Efforts to subdue a watery landscape to create a new built environment are also the subject of Bhattacharyya, *Empire and Ecology in the Bengal Delta.*

The second album contains no such views of the dam triumphant over the river. Here the dam emerges as a far more complex structure, embedded within a larger environment and ongoing work. We see the dam from a distance, a part of a landscape rather than a dominant force within it **(figure 4-3)**. Wooden walkways up against its walls show that extension work is still underway, the complete dam still in the process of being assembled. Another image shows a close-up of water emerging from the sluices, the first indication of the power that the dam can hold and channel **(figure 4-4)**. The dam may have tamed the river, but rather than being portrayed as powerless, the Nile is shown possessed of a new energy. Only water and dam can be seen, while the human minds directing this remain backstage. Here we see the forces of nature intensified by human technology rather than subdued by it. Richard White's phrase *The Organic Machine* echoes in the roar of the Nile bursting through the sluices.[22] Because the 1912 album lacks the clear narrative direction of the earlier work, it includes rather more in the way of contradictory imagery. It offers us complexity over narrative drive.

[22] White, *The Organic Machine.*

Figure 4-4 'Open sluices et 18'. Reproduced from the Abbas Hilmi II Papers at Durham University Library by kind permission of the Mohamed Ali Foundation, HIL 454/8.

V. Technology

The machines that lurk in the background of the opening image become prominent figures in the photographs that follow, towering over people and environment. The steam-powered crane dominates the photograph captioned 'Excavation in progress at Bab-el-Kibir' **(figure 4-5)**. Four of them, dark arms pointing to the sky, look down into the deep crevasse that has been torn in the stony earth. Here it is geology that technology is confronting. Although there are numerous human workers in this photograph, they are dwarfed by their own machines and constructions. On the left-hand side of the photograph a new wall casts its shadow over the workers below, while on the right hard rock forms the other side of the ravine. Between these two lies a broken expanse of shattered rocks, and below

these further excavations reveal the stratigraphy beneath. In the layering of geological time the new is always on top of the old, the ancient is always deep.[23] In George's photograph a new world is being created by towering cranes and scurrying workers. Between this and the old, solid rock at the base of the photograph is a layer of destruction wrought in the creation of the new.

Figure 4-5 'Aswan Dam : Excavation in progress at Bab-el-Kibir'. Reproduced from the Abbas Hilmi II Papers at Durham University Library by kind permission of the Mohamed Ali Foundation, HIL 455/8.

The above could, perhaps, be said of any engineering process presented in this way, regardless of the location. Indeed, much of the poetics of George's imagery seems rooted in broad ideas that might be applied anywhere. This particular aspect of time, however, is especially resonant in Egypt. The western European idea of Egypt

[23] Links between architectural and geological representation have been drawn in this seminar paper: Marrikka Trotter, 'Floodmarks, Casts, and Fragments: Soane and Gandy's Proleptic Extinction', in *Architectural History and Theory Seminar Series* (Edinburgh School of Architecture and Landscape Architecture, University of Edinburgh, 2016); and also explored, again by Trotter, in 'Ruskin's Rocks', *AA Files*, no. 73 (2016): 138–44.

that had been growing since Napoleon's expedition in 1798 was fundamentally a vision of the past, a way of understanding the country as a place stuck in some previous age. It was this Egyptian mirage that was displayed in the great exhibitions; it was the past that drew Edwardian tourists to the Nile; it was the medieval that nineteenth and twentieth century planners evoked in their policies in Egyptian cities.[24] Here was a land of mysterious ancient languages and dazzling riches hidden for millennia, only now rediscovered by the keen-eyed Western archaeologist. Thus, the imagery of a past being dug out, broken and reshaped as the foundations of the future has a particular force bound up with popular understandings of Egyptian history. The land of the pyramids was being remade for the modern world by an empire determined to transform its character.[25]

Finding a solid bedrock on which to build the foundations was one of the great challenges faced in choosing a dam site and in the construction process itself. William Willcocks' original design was for a curved dam, which would have allowed some adjustment to its form as the rock on which it was to be built was explored. By the time of construction, this feature had been scrapped, meaning that foundations had to be constructed at locations fixed before the condition of the bedrock was known. The earth under the planned site proved unexpectedly soft. The deep trenches that therefore had to be dug to be filled with vast masonry foundations took the project over budget.[26] The grandeur of the project as portrayed by George is, therefore, in part a result of the refusal of engineers to compromise: if the land was less robust than expected, it must be rebuilt until suitable to hold their dam. Engineering could correct nature's flaws.

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[24] Mitchell, *Colonising Egypt*; Paula Sanders, 'The Victorian Invention of Medieval Cairo: A Case Study of Medievalism and the Construction of the East', *Middle East Studies Association Bulletin* 37 (2003): 179–198; and *Creating Medieval Cairo: Empire, Religion, and Architectural Preservation in Nineteenth-Century Egypt* (Cairo/New York: American University in Cairo Press, 2008).
[25] Cain, 'Character and Imperialism'.
[26] Cookson-Hills, 'The Aswan Dam and Egyptian Water Control Policy, 1882 - 1902', 72.

The second album does not separate technology and work so clearly as the first. For example, **figure 4-6** centres on a stone being swung into place. Here agency seems to be shared between human workers and their machinery, in a way generally obscured in the first album. The towering cranes and belching chimneys make the dam's construction possible, but it is nonetheless a scene of dense human action. The dam itself looms over the scene, dwarfing people, stones, and machines. In this view it appears already complete, with little connection to the figures scrabbling along its sides. The dam which is created by the process George shows us seems to exist more as a perfected part of the environment than as something so straightforward as a machine.

Figure 4-6 'Extending sluices in thickened portion of the dam'. Reproduced from the Abbas Hilmi II Papers at Durham University Library by kind permission of the Mohamed Ali Foundation, HIL 454/14.

VI. Work

The meeting point of nature and technology, the means through which humanity manipulates both, lies in work. As Richard White has pointed out, work as a system of knowledge, as the predominant way of interacting with the environment, has been peripheral to scholarship concerned with discourse.[27] George's photographs are deeply concerned with work, and tend to present it in one of two distinct ways: in the 1902 album, workers are generally shown as a mass, from a greater distance, individuals subsumed within the group; by contrast, the 1912 album gives us a number of close views of workers in action, where we seem almost close enough to be one of them. In the earlier album, work is presented as one part of the transformation of the Nile by imperial engineering; in the later there is more interest in work itself and in workers as individuals.

[27] White, *The Organic Machine*, 3–29; we are perhaps more used to understanding imperial science in epistemological terms, e.g. Tilley, *Africa as a Living Laboratory*; or other fields where knowledge and power intertwine, such as economics, e.g. Mitchell, *Rule of Experts*.

Figure 4-7 'Aswan Dam: Commencing masonry in deepest part of foundations at Bab-el-Kibir'. Reproduced from the Abbas Hilmi II Papers at Durham University Library by kind permission of the Mohamed Ali Foundation, HIL 455/9.

Perhaps the most striking of the photographs of work in the 1902 album is that which faces figure 4-5. George takes us to the very depths of the earth. We lose sight of the sky, and only a long wooden ladder connects us back to the surface above **(figure 4-7)**. Sunlight streams down from the unseen sky onto the right-hand side of the image, picking out an overseer in Western dress. He seems a heroic figure in a pristine suit amid the squalor of bustling workers and ancient dirt. Only the White European is granted this status: the far more numerous African workers are important in the photographs only in their collective action, not as individuals. This would have precisely confirmed the assumptions of the officials looking at these photograph albums, as even those who were themselves Egyptian were elite figures who viewed themselves as superior to mere laborers, and indeed as a race naturally given to ruling other Africans, including the Nubians of southern

Egypt who did much of the work on the dam. The image of the White European as harbinger of modernity thus speaks to a peculiarly Anglo-Egyptian layering of racial categories, and should be seen as more than a simple assertion of White pride.[28] To be sure, it is an image we should treat warily: the engineer should not be imagined as a purely British or European figure, having often been born in Empire (as was William Willcocks) or (especially as the twentieth century wore on) recruited from among colonized peoples.[29] Even so, the role of the human workers deep in this trench has a particular place in George's imagery of the dam construction. If the layers of the photograph opposite can be taken as representing time, here we are seeing workers wrestling with the deep past. They have had to leave their futuristic machines above to confront these lower layers. They can master the earth through work, but it is a dirty business.

At other times George portrays workers covering the surface of the landscape, as in his depiction of the building of foundations at Asyut **(figure 4-8)**. A scene of broken land, puddles of water, and early sections of wall is crisscrossed by workers, most of whom seem to be bearing some load hither or thither. Again, the human work on the dam seems dirty, physical, intense in a way that the direct acting of technology on nature does not. Another familiar feature from photographs we have already discussed is that work is, here, viewed as a collective action: individuals can be picked out doing specific things, but really the power of this depiction of work is in the impression of a large group of people engaged together in the slow, painstaking process of remaking the earth. Philip Scarpino might refer to this process as terraforming, appropriating the terminology of science fiction to describe the historical shaping of the environment.[30] The move is suggestive, for the

[28] For more on the racial coding of imperialism in Egypt see Troutt Powell, *A Different Shade of Colonialism*; workers at the dam were predominantly Nubian, which is to say from the south of Egypt and north of Sudan, see Cookson-Hills, 'The Aswan Dam and Egyptian Water Control Policy, 1882 - 1902'.

[29] Ozden, 'The Pontifex Minimus'; Broich, 'Was It Really the "White Man's Burden"?'

[30] Philip V. Scarpino, 'Anthropocene World/Anthropocene Waters: A Historical Examination of Ideas and Agency', in *Rivers of the Anthropocene*, ed. Jason M. Kelly et al. (Oakland, California: University of California Press, 2018), 101–15.

project of imperial modernity portrayed by George in the 1902 album is thoroughly concerned with the future.

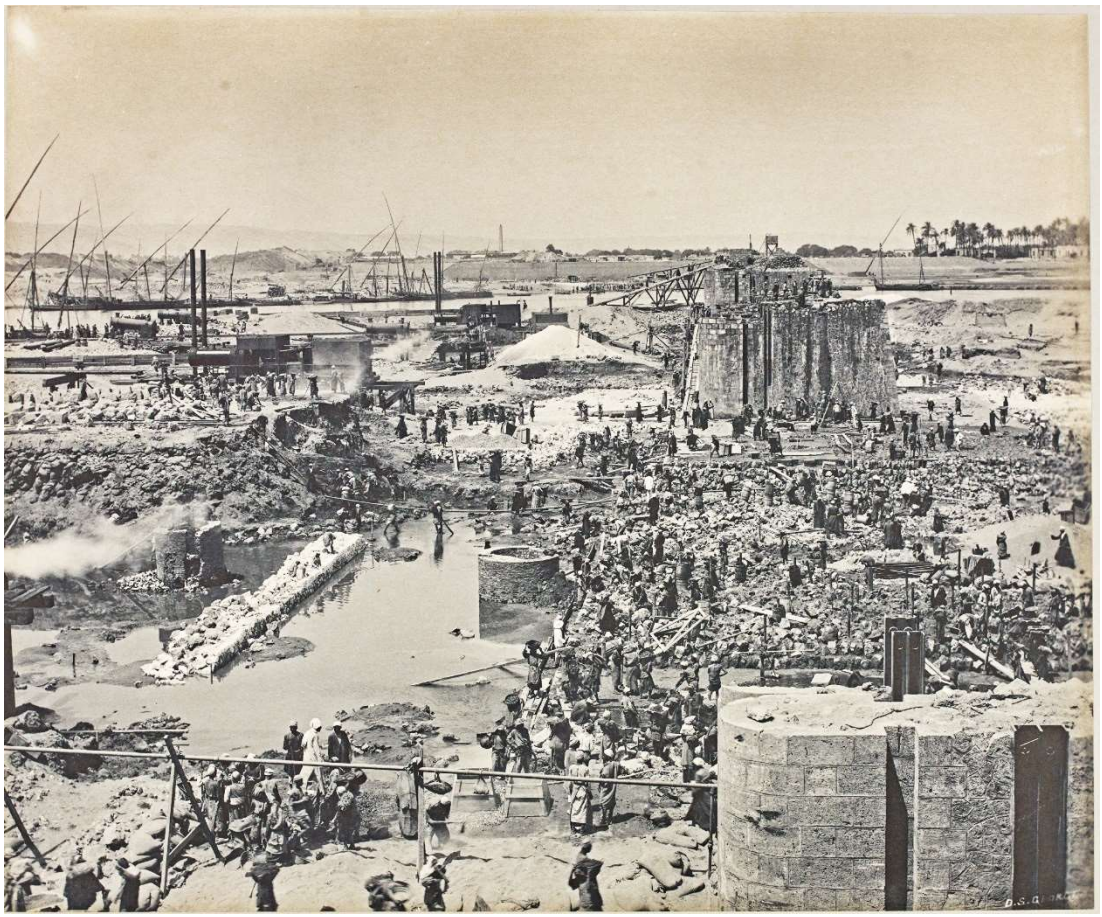

Figure 4-8 'Asyut Barrage. Foundations and masonry in progress of construction'. Reproduced from the Abbas Hilmi II Papers at Durham University Library by kind permission of the Mohamed Ali Foundation, HIL 455/30.

What of the more intimate visions of work in the second album? Consider **figure 4-9**, in which we stand close to the workers on one of the wooden walkways from which they work on the dam. A viewer might imagine themselves as a worker, or, perhaps more likely given the elite audience for George's photographs, an engineer overseeing the work. Rather than framing the action as part of a grand process of subduing the environment, George here shows us a close view of what the work itself might involve. Workers carry blocks of masonry, others mix and carry large trays of cement, and one worker – perhaps some kind of inspector – perches alone on a small wooden platform fixed to the dam. The vast wall of the dam on which

they – we? – are all at work stretches across most of the photograph, almost absurdly out of proportion with the small, individual acts which are gradually reshaping and extending it.

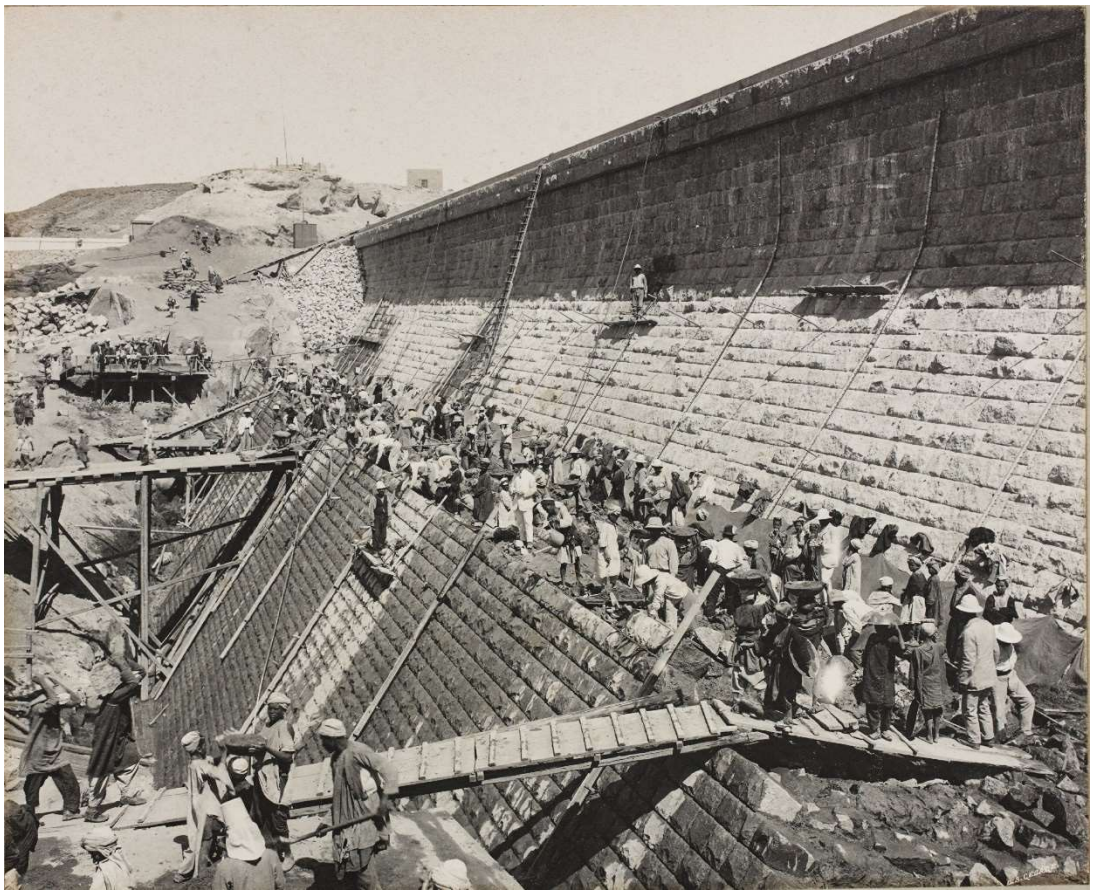

Figure 4-9 'Thickening at solid dam'. Reproduced from the Abbas Hilmi II Papers at Durham University Library by kind permission of the Mohamed Ali Foundation, HIL 454/9.

VII. Conservation

If the first album is future-oriented and the second more concerned with close depiction of work, what of the preservation agenda which Casper Andersen describes as victorious in the debates around the design of the dam?[31] Where is Philae in the official imagination of the dam? Only two photographs are concerned with it. They appear in the first album, facing each other. One is a general view of

[31] Andersen, 'The Philae Controversy—Muscular Modernization and Paternalistic Preservation in Aswan and London'.

the island rising from the reservoir. Facing it is a photograph in portrait orientation showing the "underpinning at the Eastern Colonnade." This odd pairing of the specific with the general seems to support the view that conservation was of little importance to the project. But more might be said.

Figure 4-10 'Island of Philae: General view'. Reproduced from the Abbas Hilmi II Papers at Durham University Library by kind permission of the Mohamed Ali Foundation, HIL 455/26.

George shows us the Island of Philae from a significant distance, including not only the reservoir around it but also a great stretch of the banks **(figure 4-10)**. Indeed, the lower half of the photograph is mostly taken up with new buildings next to the reservoir. The famous temple on the island seems very far off by comparison. The new buildings are largely simple warehouses and storage facilities, which have not been the focus of any other images, and yet here appear in the foreground. We might read this as another image about time. The island rising in the reservoir with

its temple of classical columns is the past: here kept serene and secure amid the turbulent creation of the future. The new buildings and surrounding landscape are where that future is being created. It has not yet been achieved, and we are not invited to compare the buildings of past and future. Rather, we are shown that even in creating the future, a safe space has been secured for the past: the environment around the reservoir may change, but the island will be isolated from this process. There is a heavy irony in this: the reason that the second album contains no photographs of Philae is that the extension of the dam drowned the island for around half the year, rendering it invisible from December until the waters began to recede for the summer. The brief promise of a secure preservation site was rapidly abandoned to the needs of modernisation.

Figure 4-11 'Island of Philae: View of underpinning at the Eastern Colonnade'. Reproduced from the Abbas Hilmi II Papers at Durham University Library by kind permission of the Mohamed Ali Foundation, HIL 455/27.

The second Philae photograph presents a complete contrast **(figure 4-11)**. It shows a trench opened between the colonnade and the temple wall, with wooden struts across it and a ladder leading down into the darkness. From the caption we know that what we are being shown is part of the process of underpinning the structure. It is hard to trace a clear relationship between this image and anything

else in the album: elsewhere, when George has wanted to show us engineering processes he has usually shown them underway, and with a clear view so that we can begin to understand the relationship between part and whole. No such attempt is made here. Both the wall and columns show clear marks of damage, and it is hard to tell from here what might be considered special or beautiful about this building. The temple that is too small for full appreciation in the opposite image is here too close for us to get a view of it at all. Perhaps what is important about this photograph is the choice to portray an engineering challenge rather than a celebrated building. Whereas the dam and barrage both receive treatments that celebrate their form, no such recognition is granted to the temple. It is viewed either as a small part of the whole project as in the first image, or brought forward strictly as a decaying physical structure as in the second. While the archaeologist or art historian may find beauty in the temple, the engineer will seek it in the dam or the barrage. Perhaps the reason that the ancient has only a small place in the future landscape is that it is already flawed and decaying, destined to be submerged by progress. The victory of paternalist preservation at Philae was doomed to be pyrrhic.

VIII. Mastering the Nile?

In the 1902 album, imperial domination of the Nile is shown through a detailed narrative that portrays technology and work subduing the river, and the dam gradually rising to dominate the environment. The 1912 album also portrays work, but in a more intimate way that seems more directly concerned with the processes being carried out. This second album also introduces a kind of photograph absent from the first: the celebration ceremony. While in the first album the completion of the dam could stand as an image of success in itself, in the second the celebrations surrounding the expansion are considered of interest in themselves. The album both opens and closes with crowd scenes, one of the relaying of the foundation

stone, the other of the dam's official opening. The last image is untitled, but this seems to be the subject. In the 1902 album, the photographs of construction guided us from an untamed to a subdued river; in the 1912 album it is not immediately clear what the narrative thrust is. What has changed from one crowd scene to the next, and how has the extension of the dam taken us there?

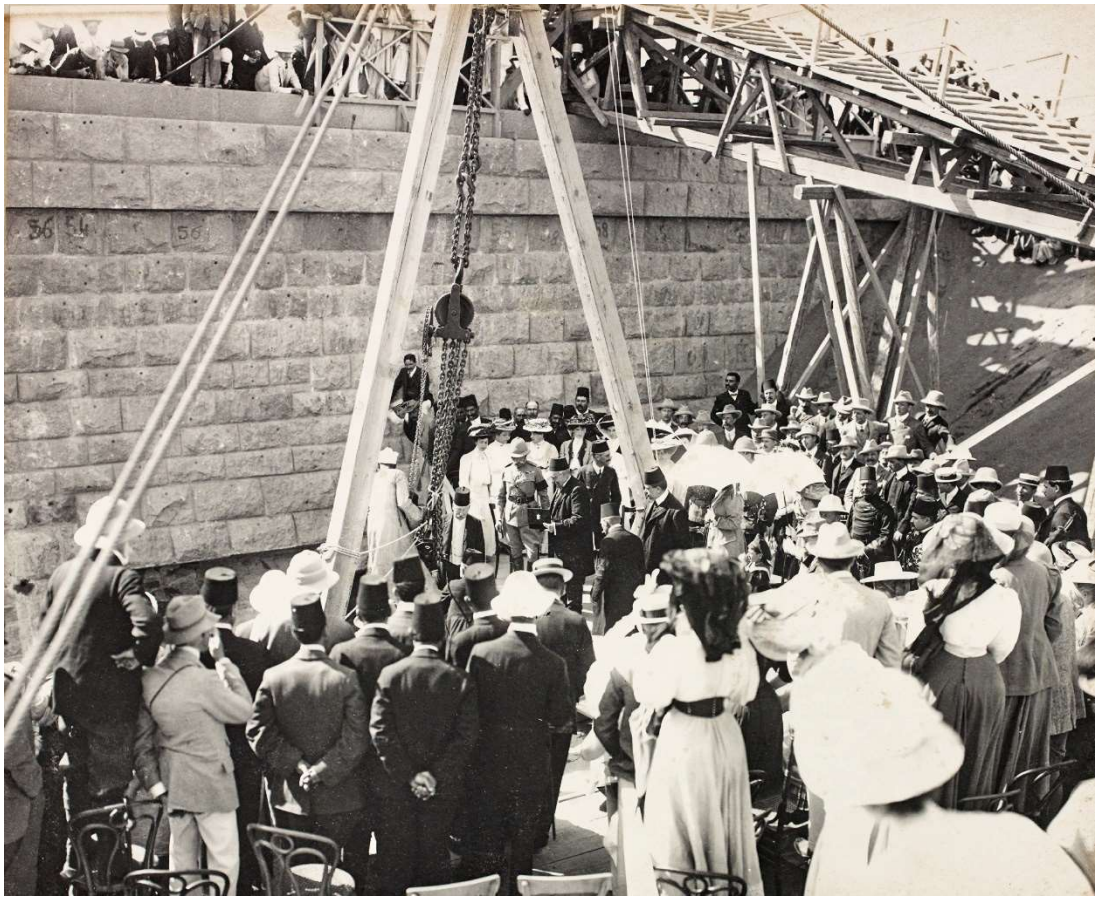

Figure 4-12 'H.R.H. the Duke of Connaught relaying the original stone in its new position'. Reproduced from the Abbas Hilmi II Papers at Durham University Library by kind permission of the Mohamed Ali Foundation, HIL 454/6.

In the opening photograph of the second album, we see a mixed crowd of Europeans and North Africans standing amidst the legs of a wooden structure that we can assume is part of the works already underway **(figure 4-12)**. They are close up against the wall of the dam. In the bottom left, one figure stands on a chair to get a better view over the heads of fellow onlookers. The event is described in the caption as 'H.R.H. The Duke of Connaught relaying the original foundation

stone in its new position.' Rather than being interested in the extension as a change to the landscape, as a new construction, George portrays it as an event, a moment in human life. This sets the tone for the album, which is also more interested in human work for its own sake than is the first collection.

Figure 4-13 Untitled. Reproduced from the Abbas Hilmi II Papers at Durham University Library by kind permission of the Mohamed Ali Foundation, HIL 454/25.

The closing photograph shows a more formal ceremony, with flags flying overhead **(figure 4-13)**. The dam, the star of the first album, appears only in the background. Facing this is a photograph of the staff quarters, with the dam in the distance (not shown). This scene is peculiarly devoid of people, seemingly only interested in the pale bungalows in which the dam has been planned and debated for years. There is nothing especially remarkable in the buildings themselves, which

conform to the widespread single-story style described by Anthony King.[32] There are no images that quite reproduce those in the 1902 album in which we see dam or barrage isolated in the water. Again, it is a human event that is depicted, which might concern the dam but which is not expressed through an image of the dam. The narrative of the first album was contained in the images of nature and the growing dam, with humans only a part of the process of engineering the landscape. But in the second album these human processes are brought forward to become the subject of the album. Thus, the move from one kind of celebration to another is important because of its place in human processes, whereas the narrative from one kind of water flow to another in the first album is a transformation in the environment itself. The 1912 album gives us no reason for imperialism, no grand purpose to the actions described, no heroic narrative of modernity. Instead, George becomes the chronicler of a specific engineering challenge.

[32] King, *The Bungalow*.

Figure 4-14 'Aswan Dam: Excavation along line of dam'. Reproduced from the Abbas Hilmi II Papers at Durham University Library by kind permission of the Mohamed Ali Foundation, HIL 455/11.

The themes from the first album, although thoroughly realised through the narrative that has already been explored, are also brought together in one deep and complex photograph, the seventh in the album **(figure 4-14)**. It is a dense image in which we can see workers on both sides of the river, as we look along the line of the dam. The river itself is mostly obscured, a thin strip across the centre of the frame. The walls of the dam works divide the image into three, with the river crossing to provide a secondary further division into six. In the central foreground we see human workers deep among the rocks, though not so deep as in previous images. They are, however, still dwarfed by the scene. In the right foreground, cranes sit atop rocks. They seem smaller here, more part of the scene than its defining feature. The left foreground is high, barren rock, and again shows the layers

of geological time next to the workers in the central panel. The central background shows the continuation of the dam on the far side of the river, with an indistinct mass of workers and a few cranes. Perspective of course means that this area is shrinking, and it is hard to pick out individual details. The left background contains the same single-story buildings we have seen before, among a few trees. The right background shows water, perhaps a lake or the early formation of a reservoir, with trees on the far shore. Does the background perhaps seem more ordered? Does it show what is being produced by the energy expended in the foreground? Just as the first image showed the works that were coming in the distance, beyond the river waters, here we may be being shown that the violence and dirt of the work of modernisation will ultimately give way to something more ordered. In this photograph George shows us the full drama of technology and human work bound together in the production of a hoped for future, a modernity that is always over the horizon.

IX. Conclusions

It should come as no surprise that British power in the Nile valley included a remaking of environmental space. What George's images reveal is how this remaking was imagined: the ways in which nature, technology, work, and conservation could variously be invoked within official imaginaries. Control over the environment meant control over its representation as well as the flows of water, and so these images are themselves part of the process of controlling the Nile. The contrast between the first album and the second is revealing insofar as the first presents a progressive narrative marching from chaos towards order that is replaced in the second by a focus on specific details rather than an implicit narrative. Little place is found for the past in either album, and even in the first it seems unclear how the region's past really fits into the future being built at Aswan.

Taken together, the albums occasion at least three observations. First, and perhaps most obviously, the vision of the future projected in these images is thoroughly technological. To aspire to mastery of the environment is to imagine a world where human action has somehow become invisible, where technological edifices become a part of a remade environment in which direct human intervention has become unnecessary, or at least hidden as much as possible. In other words, this view is purely extractive: the kind of place created is not one for habitation but for production; nature is something out there, which once controlled through technology can then be left to produce the water demanded by the human population.[33] It is not an environment in which to live. Second, and paradoxically, the creation of this cleansed utopia requires intense human action. Moreover, this action takes place within a complex web of technological and environmental agents. The role of large-scale engineering seems to expend vast human effort attempting to end the need to expend such effort. Third, this rigid, future-oriented ideology is fragile: the second album, without the clear narrative of the first, has little to add except more detailed descriptions, and some more human interest. The contradictions found in the first album become fractures in the second: it is no longer clear where we are heading or what the justification for this direction is. It is hard (unsurprisingly) to find anxiety directly represented in these albums, but this lack of direction, this emerging doubt, this bafflement at utopia delayed, does provide us with a way of imagining imperial anxiety more broadly. We can think of it as not only a fear of defeat, but a fear that your goals will be found hollow and without foundation. A fear that reality will eclipse utopia.

[33] This is precisely the critique of modernist approaches to technology set out in Bruno Latour, "Love Your Monsters," *Breakthrough Journal* 2 (2011): 21–28.

Afterword

This chapter has focused on one engineering project, indeed on one set of images of this project. These have been used to tease out some of the complex features of the official imaginary of imperial modernity. But the Aswan Dam was only the grandest part of a wider remaking of the Nile valley environment, and more should be said about its place within this system. This will also clarify the relationship between this chapter and what is to come.

Whereas the main aim of hydrological engineering in Egypt was to capture or delay water, in Sudan efforts focused on easing the flow northwards. Here, engineers faced a very different kind of challenge. The White Nile, before reaching Khartoum, trickled through a vast wetland known as the sudd. The name derives from the Arabic word for a blockage.[34] As far as British officials were concerned, the sudd was nothing more than an inconvenient obstacle to the river's flow northwards to Egypt, a sponge drawing much-needed water out of the system. In his long description of the Nile's upper basin, William Garstin resisted lengthy descriptions of the sudd landscape: 'The whole of this reach is desolate-looking and monotonous. The banks, where they exist at all, are flat and low, rarely being 0.50 metres over the water.'[35] His focus, instead was on analysing the amount of water lost in the sudd and proposing ways to reduce this, and a large section of his report concentrated on this question.[36] A significant issue that engineers only discovered in the first years of the twentieth century was that the White Nile had very different roles in the overall supply of the Nile at different times of year: during the floods, the water rushing through the Blue Nile and the seasonal Atbarah tributary held back the weaker flow of the White Nile, so that it contributed little of what arrived in Egypt; but when the Nile was low, most of its water came from the White Nile.

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[34] Jim Green and Aim I. El-Moghraby, 'Swamps of the Upper White Nile', in *The Nile: Origin, Environments, Limnology, and Human Use*, ed. Henri J. Dumont, Monographiae Biologicae 89 (Dordrecht, Netherlands: Springer, 2009), 194.
[35] Garstin, *Report upon the Basin of the Upper Nile*, 112.
[36] Garstin, *Report upon the Basin of the Upper Nile*, 148-158 and 172-183.

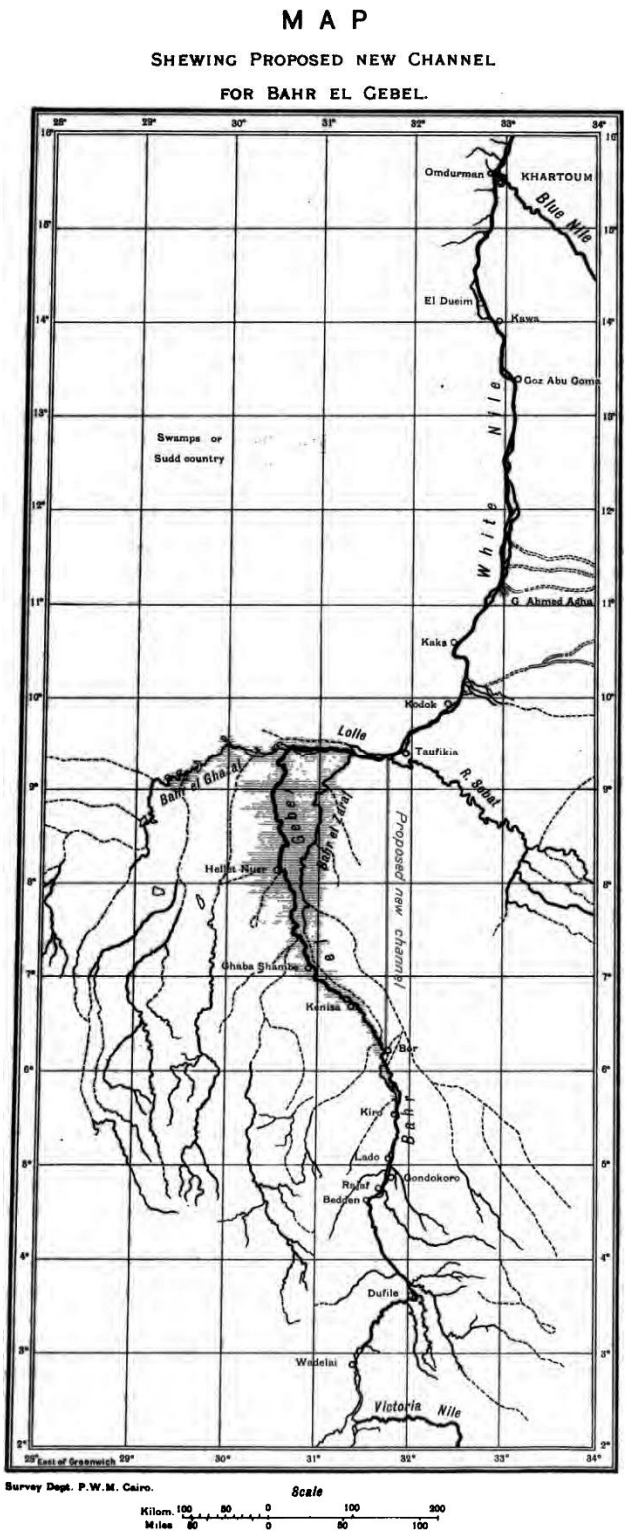

Figure 4-15 William Garstin's proposed channel bypassing the sudd. From Report upon the basin of the Upper Nile with proposals for the improvement of that river *(Cairo: National Printing Department, 1904), Plan II facing page 177.*

Much of the water from the White Nile's own flood was held back in the sudd. Therefore, while in the dry season it would be desirable to free the White Nile from the sudd in order to increase the flow to Egypt, doing so might have disastrous consequences during the flood as excess water could overwhelm the Nile's banks. Garstin, building on earlier work and responding to new information, proposed a bold and complex solution. Firstly, through careful management of the river south of the sudd, the White Nile should be 'trained' to flow in only one channel during the low season, overflowing into the larger marsh areas only when in flood. This would be achieved through strategic building of banks and planting of ambatch (*aeschynomene elaphroxylon*) to close or reduce some branches. Secondly, northward flow during the low season could be dramatically eased by the creation of a canal bypassing the sudd, which would be easy to control, reduce the distance

that water needed to travel, and minimise the amount lost to marsh and evaporation. During the flood, the flow could be diverted into the sudd.[37] Had these proposals been carried out in full, the Aswan Dam and the Asyut Barrage in the north would have been matched with equally momentous re-drawings of Nile hydrology in the south.

However, there were not serious moves towards creating a canal shortening the White Nile until the 1940s, in a very different political climate.[38] By this time, with Egypt increasingly autonomous, British official were keen to manage the White Nile more effectively in order to increase the cultivatable land of Sudan and to be able to threaten Egypt with manipulations of the water supply should they wish. The unity of the Nile valley, which underwrote British and Egyptian political thought until the 1920s, was in later decades seen as a weapon in geopolitical manoeuvrings rather than the basis for a state. The canal project, rather than being a means to bring the Nile valley together to the benefit of Egypt and the British Empire, became part of Sudanese development. Earlier British neglect of Sudan, especially the south, extended to hydrological engineering, and this limited the effectiveness of the projects that were undertaken further north. The focus on Egypt as the principal territory led to a divided Nile valley policy that in some ways created the conditions for the divergence of Egyptian and Sudanese nationalism.[39]

While the Aswan Dam was being built, engineers like William Garstin and William Willcocks were only beginning to gain detailed knowledge of the how the Nile system as a whole actually worked. As they gained more data, they were quick to turn this into bold proposals for remaking other parts of the river. These projects would, no doubt, have become tied-up in the same ambiguous complexities as we

[37] The details of these plans can be found in Garstin, 172–83.

[38] Collins, *The Waters of the Nile*; Tvedt, *The River Nile in the Age of the British*.

[39] This is, of course, a more complex development than can be discussed here, and involves cultural as well as hydrological questions. See Tvedt, *The River Nile in the Age of the British*; Troutt Powell, *A Different Shade of Colonialism*.

have seen at Aswan, as unexpected challenges emerged and ambitions were curbed or delayed. As it happened, in general this generation of British engineers was not able to put its ideas for change in the Upper Nile into practice. Thus the first Aswan Dam, as well as having its own limitations as we have seen in this chapter, was also a part of an overall vision that was in fact never realised, tied to ideals of Nile valley unity that did not survive the ruptures of the 1920s.

The Nile waters that gathered in Sudan's capital region and were held back by the new dam at Aswan, were ultimately destined to flow northwards to the centres of power and production in the region. We have seen officials attempt to transform a landscape that they feared into a site of imperial display, and engineers attempt to master the Nile even as they were first coming to understand it. As we follow the river to Cairo and the Mediterranean in the following chapters, colonial and environmental histories will entwine in new ways, extending back to antiquity and forward to the twenty-first century.

Chapter 5

Escape from Cairo

Amelia Edwards opens her account of traveling the Nile at Shepheard's Hotel, Cairo. She describes the 'miscellaneous gathering' overfilling the dining room during the tourist season:

> Here assemble daily some two to three hundred persons of all ranks, nationalities, and pursuits; half of whom are Anglo-Indians homeward or outward bound, European residents, or visitors established in Cairo for the winter. The other half, it may be taken for granted, are going up the Nile…
>
> nine-tenths of those whom [the traveller] is likely to meet up the river are English or American. The rest will be mostly German, with a sprinkling of Belgian and French. So far *en bloc;* but the details are more heterogeneous still. Here are invalids in search of health; artists in search of subjects; sportsmen keen upon crocodiles; statesmen out for a holiday; special correspondents alert for gossip; collectors on the scent of papyri and mummies; men of science with only scientific ends in view; and the usual surplus of idlers who travel for the mere love of travel or the satisfaction of a purposeless curiosity.[1]

Such was the crowd of travellers in the 1870s, when Egypt was increasingly under the power of European creditors. Shepheard's was established in 1841 and served as one of the most important European guesthouses until it was burnt down in the Cairo fire of 1952. Emily Hornby referred to its terrace as "'the hub of the Universe'", apparently quoting a well-known phrase.[2] Just as it served for a starting point for Edwards and other European travellers, so it can help us begin to think about Cairo in the colonial mind.

> Who has not heard of Shepheard's Hotel? Its name constantly occurs in novels, in travellers yarns, in after-dinner stories, and some of us even have vague memories of first seeing its name in some book of adventure read in childhood's days. For Shepheard's is today something more than a mere hotel.

[1] Edwards, *A Thousand Miles Up the Nile*, 1–2.

[2] Hornby, 'A Tour in Egypt, 1904-5', 13.

> It is an institution and boasts of a history as colourful as the kaleidoscopic crowds which throng its terrace at the height of the winter season, where the West shakes hands with the East before its portals or in its spacious halls.[3]

So declared a 1930s pamphlet on the hotel's history, produced for Egyptian Hotels Limited. While no doubt self-serving, this portrait of the hotel as a storied institution chimes with other accounts. It also fits Shepheard's into a pattern, in which certain iconic sites and buildings came to stand-in for whole cities: the Western image of Egypt and Cairo was often constructed through such places, stitched together through various travel accounts and memoirs. We have already seen a similar process in operation in Khartoum. The Gezira Sporting Club, where the colonial elite gathered to unwind, was similarly laden with importance, but associated more with officials and those living in Cairo.[4] Shepheard's, in the accounts of Edwards and Hornby, was the place where travellers and officials might meet and mingle.

[3] *The Story of a Historic Hostelry: Shepheard's Cairo* (Cairo: Egyptian Hotels Ltd., 1934).

[4] Jackson, *Buildings of Empire*, 105–23.

Figure 5-1 Shepheard's pre-1892, Photoglob Co., publisher [Public domain] https://commons.wikimedia.org/wiki/File:Kairo,_Shepheard%27s_Hotel_LCCN2017657144.tif

The hotel started life as Hotel Des Anglais in 1841, and seems to have also gone by The New British Hotel and Shepheard's British Hotel before Shepheard's Hotel stuck.[5] After a fire in 1892 it was rebuilt, with an extra floor. The building Edwards saw in the 1870s (**figure 5-1**) stood proudly looking down at the street, its pilasters and pedimented windows clearly intended to display its European heritage. The layers of the building are clearly articulated, with rustication at the ground floor giving way to lighter, more delicate ornamentation above.

Figure 5-2 Shepheard's Hotel in the 1920s or early 1930s, as rebuilt after 1892. Library of Congress Matson Collection, https://www.loc.gov/pictures/item/mpc2004002247/PP/

[5] Elaine Denby, *Grand Hotels: Reality & Illusion; an Architectural and Social History* (London: Reaktion Books, 1998); *The Story of a Historic Hostelry: Shepheard's Cairo.*

There is none of the mixing of traditions associated with the Indo-Saracenic style, such as we have seen at Gordon College and will again encounter in Heliopolis (see below). The rebuilt hotel, as Hornby would have seen it (**figure 5-2**), is similarly rooted in Western architectural language, but with important changes: the pediments over the windows have gone; the plainer pilasters are double height at first and second floors, drawing the eye upwards to the more decorated third floor, where all the energy is focused on the elaborate balcony, complete with pilasters, columns, arch and pediment. It looks like a classical temple has been stuck on the front of the hotel. Whereas the first building spread Western ornamentation across its façade so that the whole spoke clearly, here everything is concentrated into one iconic statement at the most prominent point. The words 'SHEPHEARD'S HOTEL' float above the building, detached from it like an advertiser's label, where before they had been a solid part of the façade. The later design is altogether more playful, more aware that this building is an icon of the European presence in Egypt.

Cairo dominates modern Egypt. The country has been described as a suburb of its capital. A medieval core has been added to for centuries. Flowing north from Aswan, the Nile passes through western Cairo; this area is largely modern, the medieval city having been near rather than on the banks of the river. The nineteenth century witnessed the growth of a new understanding of this medieval core as a site in need of study and preservation: Western and Egyptian elites created a history for the city, through unprecedented efforts at documentation and conservation.[6] The dawn of the twentieth century saw the expansion of Cairo into its fringes, with a range of different approaches to suburban development spreading in more or less every direction, but especially towards the river.[7] Various studies have examined the new suburbs of Cairo, emphasising their elite qualities and the contrasting urbanisms embodied in different developments. This chapter is the first

[6] Sanders, *Creating Medieval Cairo*; AlSayyad, Bierman, and Rabbat, *Making Cairo Medieval*.
[7] Moore, 'Making Cairo Modern?'; DeVries, 'Utopia in the Suburbs'.

to address this process as a transformation of the environment of Cairo, making it a river city for the first time. The extent to which this riverine setting defined the growth of western Cairo has not been analysed before. A particular kind of cosmopolitan suburbanism emerged here, made possible by the fertility of the Nile and its undeveloped banks, which had historically been left clear so that the flood could replenish the rich soil. The era of perennial irrigation created by the Aswan Dam and the associated system of barrages, made the river's banks more suitable for building than they once had been.

Today, on a drive down any of the major highways that swoop through Cairo, you can see towering billboards advertising a new city. Egypt's new capital, which thus far has no more specific name, is promoted with visions of a new life. Prosperous, healthy people are shown enjoying parks, night-life, handsome accommodation, and so on, the list of amenities that might be considered the twenty-first century's furniture of urban civilisation.[8] A promotional video shows a dry desert site transformed into a green city of relaxed pedestrians and shining towers. Cairenes are being promised an escape from the traffic, noise and fumes of their city, at once both dense and sprawling, to an urban oasis created specially for the purpose. Or at least, some people are being offered such an escape. One imagines that the new capital is not intended for Cairo's poorer inhabitants.

This chapter is a history of urban and technological speculation. Whereas the colonial authorities of Khartoum wished to create a grand new capital on the cheap, those governing Egypt saw urban development as a low priority.[9] Their chief interest was in reducing Egypt's debt, and so funds were pushed towards agriculture and land reform. Urban change focused on the new infrastructure of telephone wires and electric trams, but changes to the buildings of Cairo proceeded only

[8] Compare the adverts for urban developments in India examined in Chattopadhyay, *Unlearning the City*.

[9] For an overview of the urban development of Cairo from before the British period until its end see Volait, 'Making Cairo Modern (1870-1950)'.

slowly before an increasingly autonomous Egypt reinvigorated urban development in the 1920s. This does not mean, however, that nothing happened between 1882 and 1922. This period was characterised by piecemeal private development, largely intended for the elites, which binds Cairo to global urban trends in a different way. Examining the garden suburbs of this era can inform discussions of how private urban development acted within broader colonial capitalist contexts. This contrasts with the more centrally planned development of Khartoum, which we have seen in chapter three, and Alexandria, which we will see in the next chapter. More broadly, given repeated attempts to build new ways of life outside Cairo, this approach opens up a history of the present, in which speculation is read as one of the means by which space is produced.[10]

Scholars in recent years have become increasingly interested in exploring environmental urban histories, following the path set out by William Cronon in the 1990s.[11] Of the dozen theses reviewed by Stéphane Frioux in 2012 as examples of work in urban environmental history, half concern rivers, wetlands or water.[12] Water has seeped into the histories of waste, pollution, segregation, society, law, property and power in the city. This has not been confined to studies of the West: Charisma Acey, Anna Bohman and Aditya Ramesh have contributed important case studies on Benin, Accra and Madras, respectively.[13] Meanwhile, other historians have

[10] It hardly needs saying that writing the history of the present is Michel Foucault's aim in *Discipline and Punish: The Birth of the Prison*, trans. Alan Sheridan, Penguin Books, translation first published Allen Lane 1977 (London: Penguin, 1991) see the first chapter in particular; on the production of space see Lefebvre, *The Production of Space*; and Massey, *For Space*.

[11] Cronon, *Nature's Metropolis*; Frioux, 'At a Green Crossroads'.

[12] Frioux, 'At a Green Crossroads'; The six theses mentioned are as follows: Jennifer Bonnell, 'Imagined Futures and Unintended Consequences: An Environmental History of Toronto's Don River Valley' (PhD thesis, Toronto, University of Toronto, 2010); Matthew Booker, 'Real Estate and Refuge: An Environmental History of San Francisco Bay's Tidal Wetlands, 1846-1972' (PhD thesis, Stanford, California, Stanford University, 2002); Jim Clifford, 'A Wetland Suburb on the Edge of London: A Social and Environmental History of West Ham and the River Lea, 1855-1914' (PhD thesis, Toronto, York University, 2011); Lawrence Culvert, 'The Island, the Oasis, and the City: Santa Catalina, Palm Springs, Los Angeles and Southern California's Shaping of American Life and Leisure' (PhD thesis, University of California, Los Angeles, 2004); Jeremy Wayne Hubbell, 'Minneapolis: Urban-Environmental Change in the Upper Mississippi, 1824-1924' (PhD thesis, Long Island, Stony Brook University, 2007); Barry Johnson, 'Wastewater Treatment Comes to Detroit: Law Politics, Technology and Funding' (PhD thesis, Detroit, MI, Wayne State University, 2011).

[13] Acey, 'Forbidden Waters'; Bohman, 'The Presence of the Past'; Ramesh, 'Custom as Natural'; for more on the extensive literature on water in the global south see: Baviskar, *Waterscapes*; Beattie and Morgan, 'Engineering Edens on This "Rivered

emphasised the importance of the seas and oceans in understanding the flows of global history.[14] The relationship between cities and water thus speaks to ongoing discussions around the global and the local that will be taken up more explicitly in the next chapter. Here, I am concerned with understanding how the banks of the Nile became a site for experimentation in suburban development and in technology.

The modern history of Cairo presented here is not so much about action in its urban centre as about continued, repeated flight to its fringes. There is, nonetheless, a connection between the history of Shepheard's and of the periphery of the city. Both the hotel and the suburban sites are significant in elite imaginaries of Cairo, for they provided the privileged few with spaces in which they could escape the bustle of the medieval streets. The waters of the Nile allowed the creation of green spaces modelled on the towns and cities of Europe, helping Westerners to forget the desert dust that seemed so alien to them. The bar and restaurant of Shepheard's served a similar purpose, creating a space in Egypt in which the international traveller could feel they belonged, during their brief pause before heading south for the pyramids and tombs of the ancient world. The full urban experience of Cairo is imagined as a shock to be endured or a picturesque scene to be briefly gazed upon, not as the life of an active metropolis.[15] In the suburbs, colonialists sought to build the future, and even in the twenty-first century postcolonial authorities are trying to escape Cairo by building a new capital. The sections that follow trace this history, from the suburbs to the new cities of the twenty-first century. One thing that should be borne in mind, however: I am not for

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Earth''?'; David Mosse, *The Rule of Water: Statecraft, Ecology and Collective Action in South India* (New Delhi: Oxford University Press, 2003); Tempelhoff et al., 'Where Has the Water Come From?'; Johann Tempelhoff, ed., *African Water Histories: Transdisciplinary Discourses* (Vanderbijlpark, South Africa: North-West University, 2005); Verhoeven, *Water, Civilisation and Power in Sudan*.

[14] Wigen, 'Introduction: Oceans of History'; see also Worthington, *The New Coastal History: Cultural and Environmental Perspectives from Scotland and beyond*.

[15] Here I use the word shock to evoke how some Western travellers experienced Cairo and other Middle Eastern cities; shock city also has a distinct meaning in urban history referring to the issues arising from rapid industrial growth. For a recent work using this term see Tom Hulme, *After the Shock City: Urban Culture and the Making of Modern Citizenship*, Royal Historical Society Studies in History (Woodbridge, Suffolk: The Boydell Press, 2019), 1–6; on how images of Egypt obscured its lived reality see Mitchell, *Colonising Egypt*.

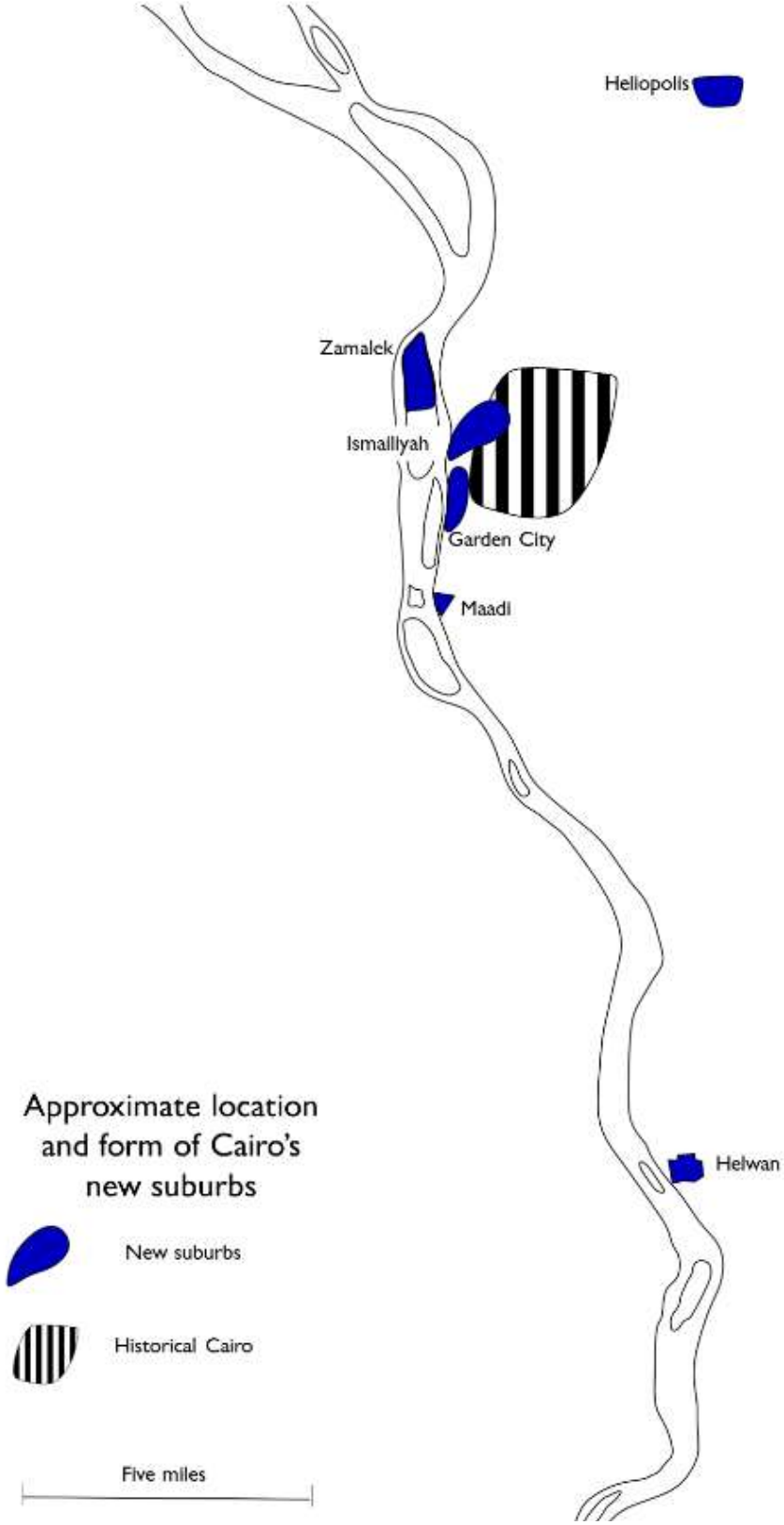


Figure 5-3 (Base data from Cook's map of the environs of Cairo, 1897, but with later sites added. From Travelers in the Middle East Archive (TIMEA). https://hdl.handle.net/1911/9421)

cities' as was commonly thought by an earlier generation of urban scholars. That the two extremes were in reality thoroughly entwined is well established, and though here I am considering elite spaces it is absolutely the case that these were utterly dependent upon – and inseparable from – the wider city.[16]

I. The making of the suburbs

By the time it reaches Cairo, the Nile has travelled more than 1,700 miles from the confluence in Sudan's capital region. The seasonal Atbarah River adds to the flow during flood, almost 200 miles north of Khartoum.[17] The gradual dispersal of the unified flow of the Nile into the channels that feed the delta to the north begins near Cairo, as a series of islands break up the river. On the southern tip of Roda Island is the nilometer that was used for centuries to measure the flood that would determine the fertility of the delta that year. It consists of a reservoir into which the rising waters run, with a column in the centre and stairs around the outside. Writing in 1889, Colonel J. C. Ardagh of the Royal Engineers described the way in which Sheikh Said Mohamed el Sowafi – 'a very ordinary person, neither intelligent nor well educated' – who was responsible for taking the measurement, went about his business. This method had apparently been handed down for centuries:

> He pays no attention whatever to the original column or its graduations. The column indeed is so encrusted with mud, that the marks upon it even at the top are not very distinct, and in the lower portion of the well are hardly discernable to good eyesight, and quite invisible to the weak-sighted Egyptian. As the column stands, moreover, in the middle of the well, it is impossible to view the point to which the water rises at a less distance than 6 to 7 feet, so that an accurate reading is practically unattainable.
>
> Beside all this, the well itself and the conduits connecting it with the Nile were so silted up with Nile mud, that it was a matter of some doubt whether there was a free communication with the river, until the level of the water had risen considerably.

[16] To understand more of this discussion see Abu-Lughod, 'Tale of Two Cities'; Beverley, 'Colonial Urbanism and South Asian Cities'; Bissell, 'Between Fixity and Fantasy'; Moore, 'Making Cairo Modern?'

[17] Distances are from Willcocks, *The Nile in 1904*, 123–25.

> The course pursued by the Sheikh is in this wise. He has a mark on a flight of modern stone steps leading down from the Mekyas to the Rodah channel, and this mark he reckons at 11 piks. Until the Nile reaches this his observations are made with reference to this mark. When it is covered, the water-level has reached the 18th step downwards from the top of the well of the nilometer. The next 10 steps upwards he reckons at 5 piks, thus arriving at 16 piks on the 8th step. The next six steps he counts as a pik each, i.e. from 16 to 22; and the last two steps as 1 pik, making the level of the top of the stairs 23 piks. Any further increase after 23 piks is measured by a rod graduates in piks of 54 centimetres. The flagrant absurdity of these records is too patent to require demonstration.[18]

The pik was the conventional measure of the scale of the Nile flood. The disdain of the colonial military mind when confronted with this approach to measurement is palpable: the Sheikh is weak-sighted, the well encrusted with centuries of mud, the methods of measurement flagrantly absurd. Tracing the history of Nile measurement from various sources and previous reports, Ardagh brands the Sheikh's numbers 'incorrect, not to say fraudulent.'[19] Over the centuries, Ardagh argues, Egyptian rulers had put pressure on the Sheikhs to produce a positive measure of the flood, so that full taxes could be collected. The Sheikhs had obliged, in a somewhat haphazard manner, by shortening the length of the pik, so that the depth of the flood had become gradually inflated. This rendered their measurements at the nilometer 'perfectly worthless, and the wretched imposture deserves to be swept away.'[20] The only use that he would admit was that ordinary people 'know by experience that when a certain number of piks is proclaimed, certain land will be watered, or certain canals will be filled.'[21] This would seem to be a rather vital function, putting the nilometer at the heart of a pragmatic local infrastructure, for which the Sheikh's measurements were perfectly adequate and well-understood. It was only by the standards of long-term, comparative

[18] Ardagh, 'Nilometers', 30.
[19] Ardagh, 34.
[20] Ardagh, 34–35.
[21] Ardagh, 35.

measurement over decades and centuries that these methods were found wanting. Judged by the needs of those who farmed the delta, there was no problem that needed a solution.

Figure 5-4 French map of Cairo, 1914. Note the peripheral position of the Nile, and Garden City on its banks. From Travelers in the Middle East Archive (TIMEA). https://hdl.handle.net/1911/9371

Whereas Khartoum was rebuilt as an ideal colonial capital, Cairo held an ambiguous place in Britain's global empire.[22] From here the Khedive ruled Egypt, propped-up by European creditors. In theory, the British consul general merely advised the Khedive, but in practice the representative of global empire and European capital was the main executive power in Egypt. This was not a position that British governments wished to assert too strongly, however, for fear of upsetting the delicate diplomatic settlement with the other imperial powers that gave them their privileged position in Egypt. This approach persisted from 1882 to the First World War, during which Britain declared Egypt a protectorate after the Ottoman Empire joined the war on the side of the central powers.[23] Quite aside from these geopolitical considerations, Cairo itself was already a large city: here any major changes to the centre would involve expensive clearance work, unlike in the war-torn ruins of Khartoum. As a result, the early years of British rule did not see much significant change to the city's buildings.[24] What had developed throughout the nineteenth century was a growing

[22] The rich possibilities in the concept of ambiguity have been explored in Christensen, *Germany and the Ottoman Railways*.
[23] On how these changes developed see Daly, *Cambridge History of Egypt*; on the complex relationship between imperialism and nationalism in the twentieth century see the later chapters of Whidden, *Egypt: British Colony, Imperial Capital*.
[24] Volait, 'Making Cairo Modern (1870-1950)'.

interest in Cairo's medieval history, which led to the surviving buildings being catalogued and studied.[25] However, despite this colonial reticence to intervene in the urban environment, the twentieth century saw an increasing number of elite spaces created. Rather than change Cairo itself, these were suburban developments largely intended to house elites who found the old city dense, crowded and hard to understand. Developments such as Garden City, Heliopolis, Maadi and Zamalek were largely private ventures, and forever changed Cairo by expanding its borders to the west, south and north. Recent studies of the city have turned attention to these suburbs and the ways in which they are entangled with ideas of modernity in Egypt.[26] Cairo in this period was shaped by piecemeal changes rather than unifying planning schemes as seen in Khartoum or Alexandria.

Historically, Cairo is a city near a river rather than a river city. The nilometer on Roda Island was not part of the historical urban fabric, and neighbours new suburban developments as we will see below. Cairo's medieval history is complex and involves multiple shifts in centre of gravity, but a consistent feature is that the city lay to the east of the river. West of the Nile lay Giza, and the two conurbations were clearly separate. The early twentieth century saw this change, as a series of speculative developments expanded the capital. The networks of river and rail were crucial to the location of the suburbs, as was the flow of tourists to the pyramids and other ancient sites. Without central planning, the suburbs

[25] Sanders, *Creating Medieval Cairo*; AlSayyad, Bierman, and Rabbat, *Making Cairo Medieval*.
[26] DeVries, 'Utopia in the Suburbs'; Moore, 'Making Cairo Modern?'

developed in a range of different ways. A few examples will demonstrate the sheer variety of architectural and urban forms in play.

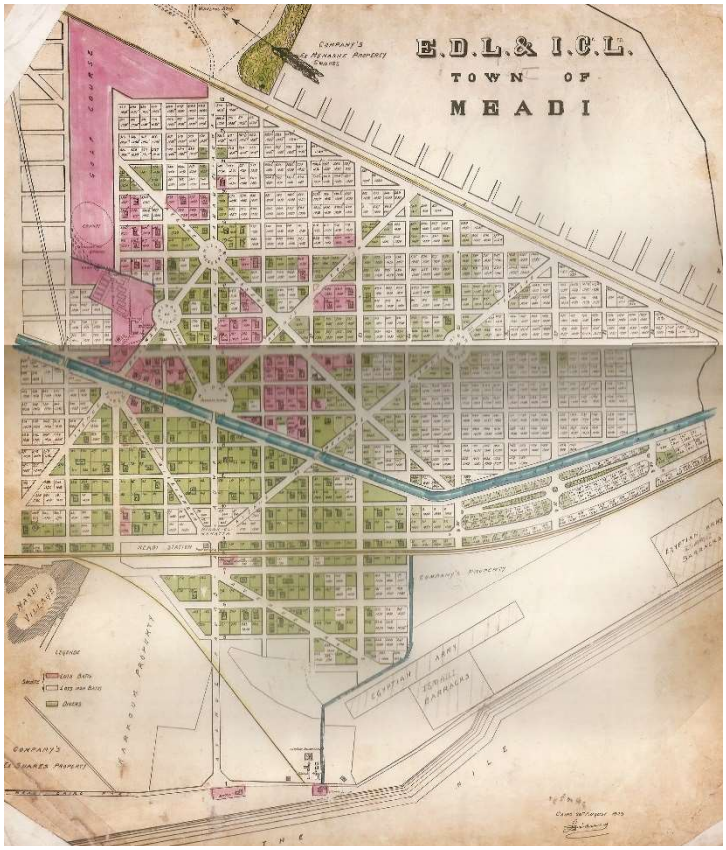


Figure 5-5 Map of Maadi, 1925. This is just one part of the development, but shows the grid with diagonals, reminiscent of Khartoum, very clearly. http://www.egy.com/maadi/

Lying some seven or eight miles south of central Cairo, Maadi shows clear similarities to Khartoum in its grid pattern crossed by diagonal streets. There may be a direct connection, as the suburb's chief architect John Williamson had spent time in Sudan.[27] This grid sat within a series of circular roads, explicitly drawing on the garden city model proposed by Ebenezer Howard, of which more below.[28] Maadi's early history was defined by competition with the spa town of Helwan to the south, which had established itself as a tourist stopping point on the way to the pyramids in the nineteenth century. Helwan was only half-an-hour from Cairo by train, but was a town in its own right with its own municipal government.[29] The Delta Land and Investment Company was formed by the owners of the railway company (Delta Light Railways) to develop the land along the route to Helwan, and it was this company that founded Maadi in 1904. Being closer to Cairo gave Maadi advantages, and as transport to both was controlled by one set of

[27] Samir W. Raafat, *Maadi 1904-1962: Society and History in a Cairo Suburb* (Zamalek, Cairo: Palm Press, 1994), 22–23.
[28] Moore, 'Making Cairo Modern?', 96.
[29] For more on the history of this rivalry see Moore, 94–97.

owners they were also able to favour Maadi in scheduling.[30] The suburb's greenery and spacious streets provided a respite from Cairo's density, while not being too far from the action.

Figure 5-6 A leafy street in Maadi in the early 2000s. The area remains one of the lease densely populated in Cairo. Public domain https://upload.wikimedia.org/wikipedia/commons/5/5e/Picture_of_a_street_in_Garden_City.jpg.

In architectural terms, Maadi became characterised by large private villas. Many of these were built in the mid-twentieth century, and the first buildings on the site were generally more modest. The building regulations focused on maintaining a spacious, airy feel by limiting building heights and the proportion of a plot that could be built on, and by mandating clear space between buildings.[31] This emphasis on private space over centrally mandated architectural style was part of Howard's ideal garden city, and in general Maadi was the closest to his model among Cairo's suburbs. It remains far less densely populated than most of Greater Cairo, even with newer developments adding high-rise blocks that contrast with the older buildings.

Heliopolis also emerged from the rivalry between Maadi and Helwan, albeit indirectly. Baron Edouard Empain, the Belgian investor who had a role in the Paris Metro and the electric tramways of Naples, Madrid, Turin and Warsaw, had made an unsuccessful bid for the Maadi/Helwan line, through his Cairo Electric Railways and Heliopolis Oasis Company.[32] Shut out of development to the south of Cairo, after his bid was defeated, Empain developed a bold plan to establish a suburb in the desert to the north-east. Whereas Maadi, Garden City, Zamalek and other

[30] Raafat, *Maadi*, 17–24.
[31] Moore, 'Making Cairo Modern?', 96–97.
[32] Moore, 97.

developments used proximity to the Nile to their advantage in creating green spaces, Heliopolis would need to bring water in. The advantage for the company was cheap land and low competition. The higher ground also provided cooler air, some relief from the heat of Cairo. The city was less than half-an-hour away by electric tram, but Heliopolis was also intended to be self-sufficient in terms of services, including an industrial zone to provide employment. This contrasts with the suburb as a largely residential enclave, as seen in Maadi.

Another difference is that Heliopolis has a clear architectural character. Empain wanted all major buildings to fit within what he imagined to be Egyptian tradition, and so his architects Ernest Jasper and Alexandre Marcel drew extensively on Arabic styles and motifs.[33] Baron Empain Palace, a mansion also known as Qasr el Baron or Le Palais Hindou, is the most elaborate of these buildings. Designed by Marcel, with decorative work by Georges-Louis Claude, it is clearly inspired by Angkor Wat in Cambodia. The round tower is directly from that building, although here it does not have the scale to dominate as it does at Angkor Wat. As in many other colonial settings, here 'the Orient' is imagined as a bloc, in which a building from south-east Asia can easily be associated with Egyptian tradition.[34] The only actual connection to building in Egypt is material and modern: the reinforced concrete used here was pioneered in the Port Said lighthouse, which we will meet

Figure 5-7 Engraving of Angkor Wat, Louis Delaporte, 1880, Public Domain https://commons.wikimedia.org/wiki/File:AngkorWat_Delaporte1880.jpg

[33] Agnieszka Dobrowolska and Jaroslaw Dobrowolska, *Heliopolis: Rebirth of the City of the Sun* (Cairo/New York: The American University in Cairo Press, 2006), 48; A. Van Loos, 'Ernest Jasper a Heliopolis, 1905-1916', in *Le Caire - Alexandrie Architectures Européennes, 1850-1950*, ed. Mercedes Volait, 2nd Edition (Cairo: Centre d'études et de documentation économique, juridique et sociale, Institut francais d'archéologie orientale, 2004), 121–37.

[34] For more on the rich history of orientalism in colonial architecture see Metcalf, *An Imperial Vision*; Crinson, *Empire Building*.

again in the following chapter.[35] This material has perhaps influenced the form of the building: one can see that it is a fairly straightforward block, to which the ornamentation has been fixed with little sense of structural logic. It is not hard to picture the same building decorated in a classical style, such is the divorce between structure and ornament.

Figure 5-8 Baron Empain Palace, JasmineElias 2009, CC-BY-SA
https://commons.wikimedia.org/wiki/File:Reverse_side_baron_palace.jpg

Garden City, as the name suggests, was directly inspired by Ebenezer Howard. Whereas Maadi's concentric plan drew closely on Howard's proposed model, Garden City was far looser and more idiosyncratic in its implementation. A series of curved streets outline the form of a fish with its head pointed to the Nile, and through their intersections construct a series of unique plots.[36] The development neighboured Ismailiyah, a commercial suburb that was intended to be part of Khedive Ismail's grand 1860s plans for the modernisation of Cairo along Parisian

[35] Claudine Piaton, 'Les phares d'Égypte : laboratoire et conservatoire de l'ingénierie européenne du xixe siècle', *ABE Journal. Architecture beyond Europe*, no. 5 (1 December 2014), https://doi.org/10.4000/abe.704.
[36] Paul Reuber, 'Travel Diary: Cairo: Garden City', *The Canadian Architect* 44, no. 1 (1 January 1999): 32–33.

lines.[37] Financial difficulties meant that most of this project was never completed, but Ismailiyah was and became an important retail area. At the start of the twentieth century, the Nile Land and Agricultural Company planned a new residential suburb for the wealthy. Garden City is closer to the city of Cairo than either Maadi or Heliopolis. It lies along the eastern bank of the Nile, around 10-15 minutes walk from Tahrir Square (itself also part of Ismail's master plan), just to the north of Roda Island. The island of Gezira faces Garden City, and was itself home to the suburban development of Zamalek and the Gezira Sporting Club; the whole area was an elite space set somewhat apart from Cairo's historical centre.[38] As such, this was a development for the wealthy who wanted to be close to the levers of power in colonial Egypt. It was particularly popular with Egyptian, Levantine and Ottoman aristocrats.[39]

Figure 5-9 Garden City in 2013. Public domain https://upload.wikimedia.org/wikipedia/commons/5/5e/Picture_of_a_street_in_Garden_City.jpg

[37] Moore, 'Making Cairo Modern?', 88–91.

[38] On Zamalek see Moore, 91–93; on the Gezira Sporting Club see Jackson, *Buildings of Empire*, 105–23.

[39] Moore, 'Making Cairo Modern?', 90.

Like Maadi, Garden City accommodated a range of architectural styles. **Figure 5-9** shows an extensive *mashrabiya* covering the façade on the left; this traditional feature of domestic Arabic architecture creates a sheltered space where residents can mingle and look out over the street without being exposed to the full force of the sun, or being easily seen by those outside. The wooden structure is generally added to a brick or stone building, rather than being structural. In this example the second floor is open to the air, making a balcony, while the ground and first floors are sheltered behind stained glass in decorative wooden frames. This provides a rich contrast with the concrete façade of the building opposite. The balconies and windows here could be found anywhere across the Mediterranean and beyond. The streetscape that we see now is more crowded than in earlier stages of development, but retains some of the eclectic mixing that goes back to the suburb's foundation. As James Moore has pointed out, different elite communities tended to favour different architectural styles, with French architects favoured by the Syro-Lebanese and Italian architects often preferred by Egyptians.[40] To

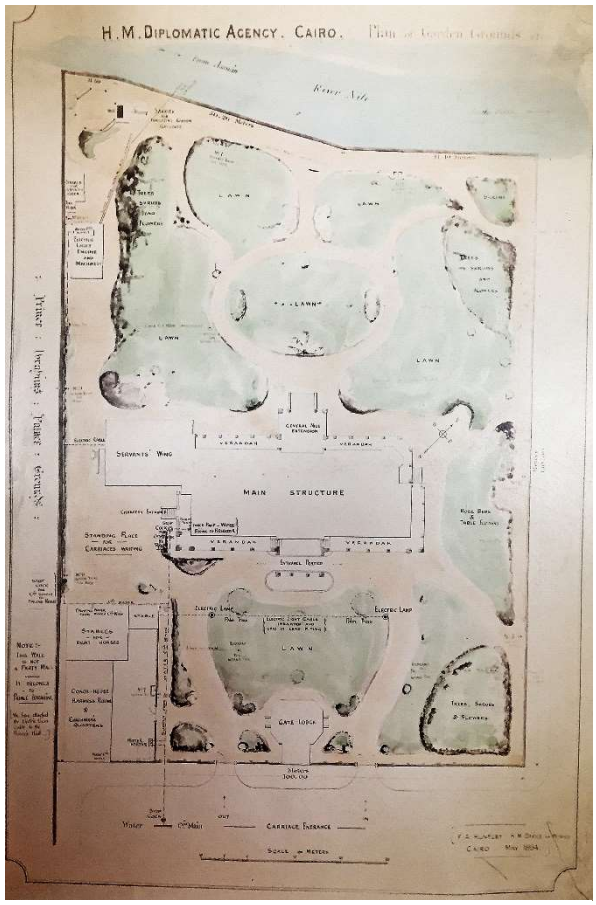


Figure 5-10 Plan of the diplomatic agency, Cairo. British National Archives, WORK 40/469.

[40] Moore, 90–91.

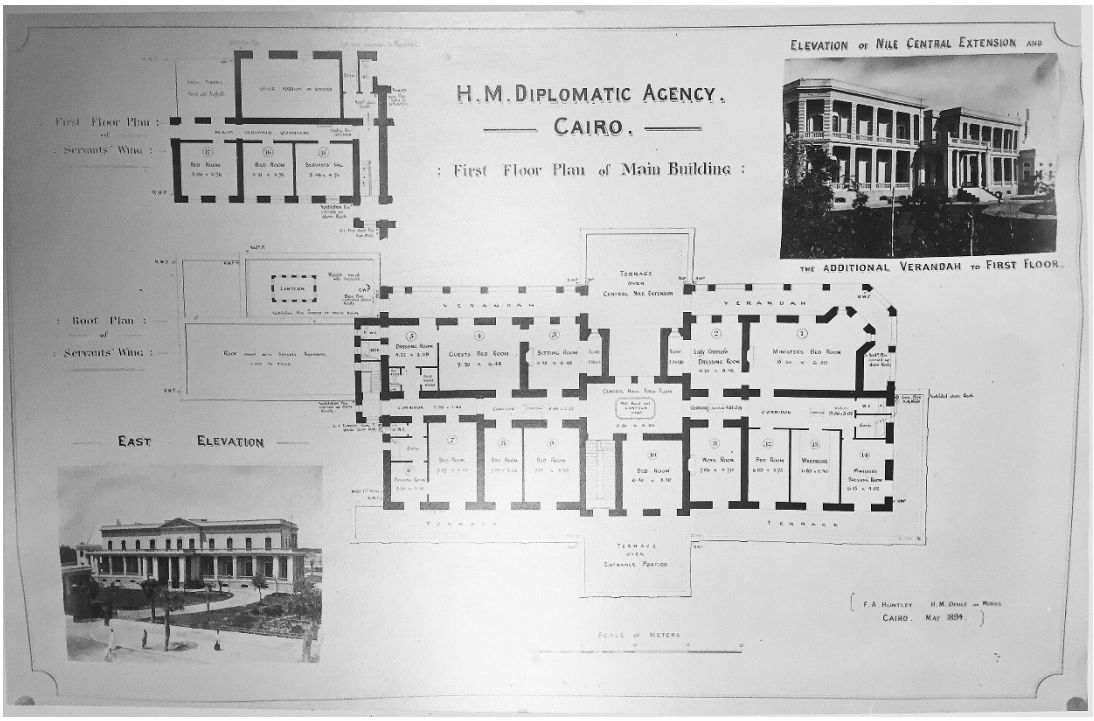


Figure 5-11 First floor plan of main building, British National Archives, WORK 40/469.

these European styles local features could be added, as we have seen. This could produce its own kind of architectural mixing, but is clearly different in kind from the European visions of Oriental building seen in Heliopolis.

Garden City neighboured the British Diplomatic Agency, which was extended in 1894, before the suburb was conceived. An album of plans, elevations and photographs prepared by Frederick A. Huntley of the Cairo Office of Works was sent to the Ministry of Works in London.[41] These images show how the ways in which river, infrastructure, garden and building operated together in the production of an elite space. **Figure 5-10** shows a plan of the site, green lawns occupying most of the space. An electricity generator is shown in the top left, close to the banks of the Nile; its cables are marked on the plan as well and there are electric lights shown on the driveway. In the bottom left are stables for horses, and the plumbing connection to the mains water supply on the street is also shown. The

[41] F. A. Huntley, *H. M. Diplomatic Agency, Cairo, plans & elevations of the work as executed*, British National Archives WORK 40/469.

agency itself is a relatively small feature in this assemblage, supported by electrical and plumbing technologies and surrounded by, as well as lawns, trees, shrubs, roses and other flowers. Water direct from the Nile filled a reservoir for the garden, and this may also have acted as a form of flood defence by providing somewhere for rising water to go. Photographs in **figure 5-11** show the two floor verandah facing over the Nile (top right) and the more restrained east elevation (bottom left), which looked to the street and would have been the first site of the building for arrivals by coach. The classical pediment and ground floor verandah give an impression of measured authority. On the other hand the Nile façade looks over the river with a weighty significance, providing diplomats a place from which to view the river, while also leaving anyone looking at this building from this side in no doubt that they were being looked at in return. The first floor verandah was part of the extension work. **Figure 5-12** is directly about the relationship between the agency and the river. Photographs show the Nile at low and high flood, relative to the small quay that served the agency; a view from the far bank shows the imposing façade to full effect; there is also an image of the reservoir and another of stabling for oxen. The plans on the left of this page show a sakkieh (a water-raising device), the reservoir and the electricity generator in more detail than in the earlier full plan. The sakkieh would have been needed in low flood to keep water in the reservoir, thus allowing the agency to maintain green lawns that would otherwise have become dry. It was for turning this device that the oxen were needed. This single site brings together many of the features of the suburban developments under discussion here: greenery is sustained by the Nile, architecture creates an elite space, electric light further distinguished this from the rest of the city. Just as this building was intended to show the importance of the British, so the suburbs we have been examining were planned as spaces apart, where the powerful could escape from the realities of historical Cairo.

II. The garden city dream

There is a complex relationship between the garden city ideal as put forward by Ebenezer Howard at the turn of the nineteenth and twentieth centuries, and the many ways in which this was realised in different developments.[42] Letchworth Garden City in Hertfordshire, England, is recognised as 'the world's first garden city', and proclaims so proudly on its signs, but is only a little older than the Cairo suburbs described above: First Garden City Ltd. was founded to establish it in 1903, just a year before Maadi's foundation. We have also encountered the term applied to Khartoum, which was first laid out in 1899 shortly after the reconquest, but this seems more like a case of a term being used retrospectively. The later plans by Edward Stanton (in 1906) and William McLean (in 1912) could have been influenced by the garden city movement, but these consisted of adjustments to Khartoum's street plan rather than major changes in how the city was conceived. In this section

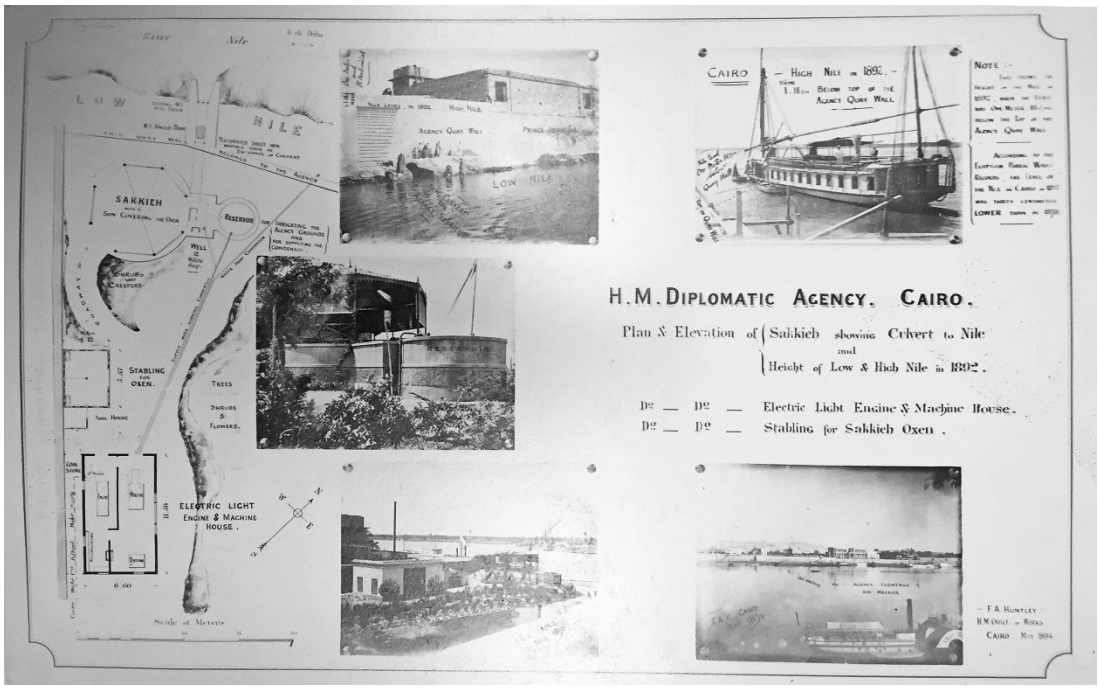


Figure 5-12 Water infrastructure of the Diplomatic Agency, British National Archives, WORK 40/469.

[42] Howard, *Garden Cities of To-Morrow*; Bigon and Katz, *Garden Cities and Colonial Planning*; Bigon, 'Garden Cities in Colonial Africa'.

I want to examine Howard's ideas more closely and tease out how they relate, in particular, to the suburbs of Cairo.

It must be understood at the outset that, although an important work in the history of urban planning, Howard's garden city is, in essence, an anti-urban approach to regional planning. It is intended to reduce and to some extent reverse rural migration to the city, as set out in the opening chapter of *Garden Cities of To-morrow*.[43] Howard claims that this problem is recognised by all who are interested in improving society. He sees the land as 'a *Master-Key*' [emphasis original] to solving myriad social ills, including those 'of intemperance, of excessive toil, of restless anxiety, of grinding poverty – the true limits of Governmental interference, ay, and even the relations of man to the Supreme Power.'[44] He acknowledges the draw of cities because of economic and social opportunities, but wishes to create a new 'Town-Country' that combines the benefits of both rural and urban life while reducing the weaknesses of each.[45] His garden city proposal, thus, is part of a wide agenda in which landscape is celebrated and the urban is seen as a locus of vice. It speaks to particular concerns around urban development in the UK in the nineteenth century, especially England and London.[46] The extent to which his proposed solution was transferable to other parts of the world might, therefore, be something to question.

Howard's garden city was a town of around 30,000 people nested within a planned region. The whole project he imagined covering 6,000 acres, of which 1,000 would be the city itself (approximately 2428ha and 404ha respectively). We have already encountered a similar concern with regional planning in William McLean's writings in chapter three. These early twentieth century thinkers on cities did not see them

[43] Howard, *Garden Cities of To-Morrow*, 9–13.
[44] Howard, 13.
[45] Howard, *Garden Cities of To-Morrow* see the diagram facing page 16.
[46] The final chapter is on 'The Future of London' Howard, 141–52.

as divorced from their surroundings, but as fundamentally embedded within them. Indeed, Howard's project might be imagined as one of deepening and enriching these connections. His city plan is concentric: a circular central garden is surrounded by: a 'crystal palace', a glass-roofed shopping area and winter garden providing shelter in all weathers; residential streets with houses and gardens; an industrial zone of factories and warehouses; allotments and small farming areas; a rail line encircling all and providing easy transport links for the industrial area. Six major boulevards run from the centre of this design to the edges, like the spokes of a wheel; beyond the rings of the town itself these become roads into the countryside and further afield. Beyond the rail line, the wider countryside is used for larger farms, agricultural training, hospitals for the blind and deaf, an agricultural college; in all, this area beyond the city limits Howard imagines to house around 2,000 people.[47] He is clear that the plan as set out in his book is purely notional, and that it would differ widely in any real site as it would have to respond to local conditions; 'this plan, or, if the reader be pleased to so term it, this absence of plan' was not intended to be a blue print.[48] One of the points on which it was intentionally vague was architecture.

We have already seen that architecture in Egypt's suburbs varied widely, and in this these developments certainly fit into Howard's ideas. He argued that the municipality should only be involved in upholding the general line of the street and in ensuring sanitary conditions.[49] However, the powerful role of development companies in the Cairo suburbs meant that this was only sometimes the case: in Garden City and Maadi owners were able to exercise their own taste, but Heliopolis had a distinctive architectural style imposed by its creator's vision.

[47] For these plans and figures see Howard, 20–27.
[48] Howard, 26.
[49] Howard, 24.

On the other hand, Heliopolis was the only example we have looked at that attempted to create a settlement that was not reliant on Cairo for services or jobs. Whereas Maadi and Garden City were suburbs in the conventional sense that they depended upon their proximity to the urban centre, Heliopolis was intended to support its own industry to some extent. Of course, Howard's design was for a town set in the green environment of temperate Britain, not a new city in the desert, reliant on water pipes and electric trams. That Heliopolis was entirely dependent on such infrastructure is perhaps part of the reason why the developers sought to encourage industry there.

There is a more essential difference between Howard's imagined garden city and the Cairene suburbs that took up the idea, however. The people Howard pictured inhabiting his town were thoroughly economically rational Western individuals, who would follow the economic logics of trade and land prices. There is not, in his vision, a lesser group of people to be kept out of garden city until they have been disciplined into something more acceptable.[50] But all of the suburban developments in Cairo's early twentieth century rested on this assumption: they were founded not for whoever was attracted to their way of life, but to accommodate specific elite groups. Garden City itself, with its small number of expensive plots, was connected to a series of elite spaces on Gezira Island and the banks of the Nile: the Gezira Sporting Club, the suburb of Zamalek, the British Embassy. Maadi and Heliopolis, further out from Cairo, larger and less expensive, were also targeted at Western migrants and Egyptian elites. Howard's whole aim was to improve the lives of the ordinary people by providing a different model of town-country relationship; on the other hand, the Cairo suburbs were designed to free the wealthy and powerful from the burden of urban living. They were precisely not intended to rewrite the structure of urban space to the benefit of a broader public.

[50] Whereas the whole project of empire in Egypt was designed to change the Egyptian character, see Cain, 'Character and Imperialism'.

It is true that Heliopolis was at least intended to supply work and to function independently of Cairo, but even here many of the first houses were given over to government officials.[51] We can find some of the formal features of Howard's garden city in Maadi, Garden City and Heliopolis, but stripped of any radical potential and put to the service of social division.

We now turn our attention from suburban developments to a different kind of experiment taking place on the banks of the Nile at the same time: the world's first solar power plant. This project raises questions around the place of infrastructure in the making of space, and of the other possibilities that might have developed from this kind of experiment if the discovery of oil in the Middle East had not radically increased the known supply of fossil fuels in the early twentieth century.

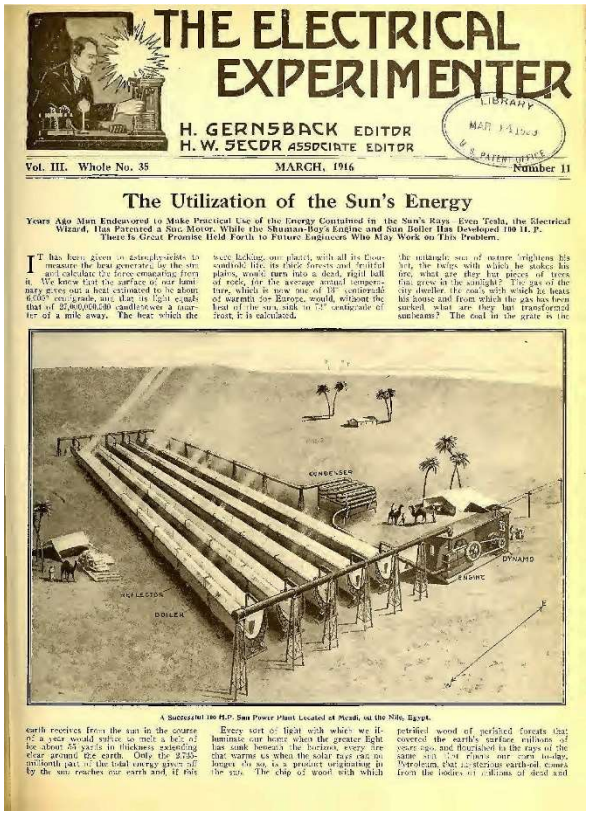
III. Sun power in the suburbs

> Our forefathers used to worship the sun – many people do it still – also fire, water, etc. The modern idea is to make practical use of these things; we look upon them with a cold, calculating eye and treat them as our servants rather than as our gods.
>
> The latest idea of Modern Egypt is to make the sun work its machinery for [us]. We are almost trying to harness Phoebus!
>
> *Egyptian Gazette*, 12 July 1913
>
> The future development of solar power has no limit. Where great natural water powers exist, sun power cannot compete; but sun-power generators will, in the near future, displace all other forms of mechanical power over at least 10 per cent of the earth's land surface; and in the far distant future, natural fuels having been exhausted, it will remain as the only means of existence of the human race.
>
> Frank Shuman, *Scientific American*, 1911, vol.105, 14, 291

On 11 July 1913 a special train ran from Cairo to the outskirts of Maadi. Various dignitaries from Egypt's capital had been invited to see a new technological marvel:

[51] Moore, 'Making Cairo Modern?', 99.

the world's first functioning solar power plant.[52] Demonstrated by American inventor Frank Shuman, this was another attempt to harness natural forces in the Nile valley. But whereas the Aswan Dam responded to the local peculiarities of the environment, this power plant was intended to demonstrate a more general principle: that the tropical and equatorial regions of the world could generate much of the power they needed from the rays of the sun itself. Whereas ancient peoples had worshipped the sun, modern scientists would capture its power. Shuman set out a vision of a geographically divided world, in which each region relied on distinctive forms of natural energy. Egypt, here, was standing as a representative of all the sun-kissed places of the Earth. Shuman gambled that it could be made into a literal Heliopolis.


THE ELECTRICAL EXPERIMENTER

H. GERNSBACK EDITOR
H. W. SECOR ASSOCIATE EDITOR

Vol. III. Whole No. 35 MARCH, 1916 Number 11

The Utilization of the Sun's Energy

Years Ago Man Endeavored to Make Practical Use of the Energy Contained in the Sun's Rays. Even Tesla, the Electrical Wizard, Has Patented a Sun Motor. While the Shuman-Boys Engine and Sun Boiler Has Developed 700 H. P. There Is Great Promise Held Forth to Future Engineers Who May Work on This Problem.

A Successful 100 H.P. Sun Power Plant Located at Meadi, on the Nile, Egypt.

Figure 5-13 The Electrical Experimenter, March 1916. 'The Utilization of the Sun's Energy' https://en.wikipedia.org/w/index.php?title=File:The_Electrical_Experimenter,_Volume_3.pdf&page=643

Shuman's design, developed with Englishman Charles Vernon Boys, was the first that was able to gather energy from the sun efficiently enough for use at scale.[53] Rather than relying on mirrors to concentrate the rays of the sun, Shuman and Boys focused on effective insulation of a series of small boilers feeding a low pressure steam engine. Their insight was that the sun could, with only minor use of mirrors, heat liquid in a

[52] Among the guests the *Egyptian Gazette* lists: 'Mr. J. A. Cable, Dr. L. H. Gough, Ibrahim Bey Sherif, Rev. and Mrs. W. Jaffray, Rev. J. J. M. Cowper, Captain Adams, Mr. E. Harran, Mr. Henriques, Mr. C. E. Duffield, Mr. A. Garcias, Mr. J. A. Gunn and Mr. Bearcroft.' 12 July 1913 http://www.egy.com/maadi/solar-energy.pdf.

[53] Frank Shuman and Charles Vernon Boys, Sun-boiler, United States Patent Office 1240890, filed 30 September 1912, and issued 25 September 1917, https://patentimages.storage.googleapis.com/f2/96/bb/caf6bd8290d922/US1240890.pdf; for the place of this design in the history of solar power see John Perlin, *Let It Shine: The 6,000-Year Story of Solar Energy*, Fully revised and expanded (Novato, California: New World Library, 2013).

well-designed container, and that most previous designs lost too much energy from generating excess temperatures.[54] Further, Shuman had a clear sense of the economics of power production: 'The first cost of a sun-power plant to be practical, and of commercial value, must be sufficiently low so that the interest on the investment does not make it unprofitable. This is the rock on which, thus far, all sun-power propositions were wrecked.'[55] As Shuman pointed out, the low fuel cost that comes from using the sun meant that his design could be more economically effective than a conventional steam engine even with higher start-up costs. He estimated that his plant would cost around twice an equivalent steam engine, but rapidly make that difference back in savings. It was intended for irrigation use, using the power of the sun to move the waters of the Nile.

There were two reasons behind Shuman's decision to promote the power plant in Egypt. The first was simply practical: for solar power to be effective, a place with reliable sunshine year round was needed. Here we see an example of how natural features can be made part of infrastructure systems, indeed how some infrastructure systems cannot exist without them.[56] There was more in play here than just sunlight itself: the high prevailing temperatures meant that less energy would be lost through excess heating of the machinery. In a cold climate, pipework heated by the steam in the system would have lost a lot of heat to the air around; in Egypt, the already hot air would extract less energy this way. Thus, the very air of Egypt was part of the efficient working of Shuman and Boys' power plant. Another point in favour of Egypt was the high price of coal, as this increased the value of the savings offered by using sunlight as fuel. One might ask, given these considerations, why they did not build the solar power plant even further south? The average

[54] For an explanation of their improvements on earlier attempts see Frank Shuman, 'Power from Sunshine', *Scientific American* 105, no. 14 (1911): 291–92.

[55] Shuman.

[56] This point has been made in Carse, 'Nature as Infrastructure'; and is related to the argument in LeCain, *The Matter of History* although he does not use quite these terms.

temperature at Khartoum, for example, is 24C in January, compared to 14C in Cairo, and coal, if anything, still more expensive.[57] There are some climatic considerations against Khartoum: it experiences more rain than Cairo, and the haboobs that were described in chapter three could have wreaked havoc with the power plant. But the more significant point is Schuman's second reason for choosing Maadi: near Cairo, enough Western reporters and influential individuals would be able to come to witness the power of the sun. Shuman was more than an inventor: he was a promoter of his ideas, and for this he needed an audience. Cairo was, as we have seen at Shepheard's and in the developing suburbs, a meeting point for elites from across Europe, the Middle East, and further afield. It was a city rich in criss-crossing connections, and with easy access to its surroundings from the burgeoning railways. Khartoum, by comparison, was sparse in terms of Western visitors or inhabitants, and links to areas beyond the city were still poor. Thus we can see, in Shuman's use of Maadi as a demonstration site, a combination of material and cultural considerations. This shows how networks of human influence interact with, and are borne upon, the physical behaviour of things.

> Thus the fight goes on between Dame Nature and the scientists. Whether we shall ever have an efficient solar boiler and engine is a problem worth thinking about and a very interesting one at that, as we possess no greater source of natural energy, to be had without taxation or special leases from some money-grabbing coal, oil or other baron, than that of the sun. Some day we may be able to derive all necessary light and power, for our homes at least, by means of a solar-electric plant located on the roof, and who shall say that we must be taxed for utilizing such energy?[58]

Both the solar power plant and Maadi itself were experiments in the making of space. The suburb, emerging from the late nineteenth century onwards as a response to the rapid growth of urbanisation associated with industrial

[57] These are modern temperatures from www.timeanddate.com. Of course, global warming has increased average temperatures somewhat since the 1910s, but the details of this do not alter the point that the further south one goes down the Nile, the hotter it becomes.

[58] The Electrical Experimenter, March 1916, 663.

development, was a global phenomenon that manifested in different ways in different places. Solar power was seen as a solution to the finite supply of coal, until the discovery of the oil fields of the Middle East changed the economics of fossil fuel supply and created a new politics of carbon.[59] These projects were not neighbours by accident: the Nile provided the possibility of creating a green suburb, and the need for irrigation that the solar power plant supplied. In their portrayal of infrastructure projects at this time, writers and image-makers often focused on the idea of mastering nature, as we saw in the preceding chapter. But it may be more productive here to think of the river as the driving creative agent, setting out the most fundamental features of how space could be made, which developers and scientists then had to work within and adapt to. The idea that they mastered anything seems to rather overstate the case.

There are hints, in the sources quoted above, of another potential spatial change raised by the use of solar power. In Shuman's writings, and in reports that were clearly influenced by his turns of phrase, we find an interesting idea emerging: that the planet might one day be ordered according to the kinds of natural power available in different locations. He only mentions water power, but if we add to that wind and perhaps geothermal power, we can begin to imagine the implications of Shuman's vision. He is thinking of a world in which all coal has been exhausted, where only naturally occurring power can be used, and he tells us that on 'at least 10 per cent of the earth's land surface' the sun will become the chief power source even before coal is gone. Picture a globe: in our expanded version of Shuman's prediction, human life in the equatorial and tropical regions is powered by the sun, while further north and south power must be gathered from water, wind and geothermal sources. Timothy Mitchell has argued that coal and then oil restructured modern politics, that we cannot understand the history of democracy

[59] Timothy Mitchell, *Carbon Democracy: Political Power in the Age of Oil* (London; New York: Verso, 2011).

without appreciating the material properties of its energy sources.[60] Shuman did not develop a complex model for what a world of largescale sun production would look like, as he was only raising the possibility in order to promote his new technology. But thinking through his scattered phrases on this might help us to imagine a strange alternative history, in which control over renewable energy sources became the defining question of twentieth century politics, rather than oil power. This might have fundamentally changed how societies make space, as deserts were given over to solar plants, rivers were dammed to harness their motive power, and hillsides were planted with windmills. Mitchell links the development of large cities to the use of coal, raising the possibility that in a world reliant on renewable sources of energy the settlements in which we live might look completely different.[61]

Frank Shuman died in 1918. In the early decades of the twentieth century, few could have known just how much oil would be discovered in the Middle East. Without these discoveries, many of the defining technologies of the last century could not have developed in the way they did, perhaps most obviously the motorcar. Shuman, working at the same time as these discoveries began, was attempting to establish a different future in which human ways of life would not depend on burning fossil fuels. Like colonial urban planners, he was seeking to bring life and productivity to the desert, in his case through technological change. His innovative ideas would not be taken seriously again until the oil crises of the 1970s, but dreams of bringing fertility to the desert have persisted throughout the colonial and postcolonial eras.[62] It is to the surviving imagery of this dream that we now turn.

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[60] Timothy Mitchell, 'Carbon Democracy', *Economy and Society* 38, no. 3 (1 August 2009): 399–432, https://doi.org/10.1080/03085140903020598; Mitchell, *Carbon Democracy*, 2011.

[61] Mitchell, 'Carbon Democracy', 1 August 2009, 402.

[62] On the later history of solar power see Perlin, *Let It Shine*.

IV. Escape to the future – the persistence of postcolonial dreams

A video opens on a desolate landscape of dusty earth, dry grass and scrubby trees.[63] A single drop of water falls from the sky; a green carpet of grass suddenly appears, studded with decorative flowers; taller trees spring up and grow verdant leaves. A multi-lane highway is laid, trees and lampposts grow alongside it and a sinuous bridge reaches across it. These images, from the opening scenes of one of the many promotional videos for Egypt's new capital, seem to hark back to colonial dreams of making the desert fertile. The scale of transformation promised here, however, towers over the ambitions of colonialists like William McLean or speculators like Baron Empain. A city of gleaming glass, glittering water and pure green sward can be conjured from the desert seemingly without effort, dirt, pollution or poverty.

Egypt's new capital was announced on 13 March 2015 at Sharm el-Sheikh, a beach resort on the Sinai Peninsula.[64] The first phase of the plan would cost around $45 billion, but it was part of an ambitious long-term project to alleviate traffic and population in Cairo by building a city to the east. It would also attract investment into Egypt, and that first announcement was followed by a pledge of $12 billion from Saudi Arabia, Kuwait and the United Arab Emirates. At the start of 2019, *The Economist* reported on the difficulty of attracting Egyptians to live in a city that may not produce jobs, and the reluctance of foreign embassies to move to a site dominated by the military and without any established civil society.[65] This project comes only fifteen years after New Cairo, itself a major expansion of the old city to the south and east that was intended to house 5 million people, but in fact has a population of less than 500,000. Despite attempts to escape it, Cairo continues to grow. Egyptian planners in the twenty-first century face the same problem that Howard was trying to solve over a hundred years before: how to reduce the draw

[63] 'Homepage', new capital compounds, accessed 1 December 2019, https://www.newcapitalcompound.com/.

[64] 'Egypt Plans New Capital Adjacent to Cairo', accessed 2 December 2019, https://www.aljazeera.com/news/2015/03/egypt-plans-capital-adjacent-cairo-150314014400946.html.

[65] 'An Elephant in the Desert', *The Economist*, 26 January 2019.

of a major city to deal with its overcrowding. Of course, the numbers involved have swelled since Howard's day: a development of 32,000, as in his proposed garden city, would be negligible in relation to Cairo's 20 million inhabitants.

After the opening montage of the desert given life, the promotional video switches to more conventional visualisations of the urban master plan. A central green corridor runs alongside the highway we have already seen, featuring landscaped parkland and lakes, and six subsidiary corridors open off of this. Streets are oriented around these spaces. The visualisation then floats over these areas, showing them rich with greenery. An observation wheel and various funfair-style rides nestle among the trees. Pedestrian walkways snake through and around the parkland, skyscrapers loom over the whole scene. A triumphal archway flanked by arcades seems to lead us out of this section. A long, narrow lake, acting as an artificial river, runs through the central section of the parkland, with larger pedestrian thoroughfares running alongside it and bridges across. The final third of the parkland is closer to the bases of the skyscrapers, with a grand corniche running alongside the water, close to the towers. The final images focus on the towers themselves, before returning to the birds-eye view of the masterplan.

In another video, a group of healthy young women jog through a green park.[66] In the background are ponds, another group of people exercising, and gleaming tower blocks. Lively music is being played by two musicians; a series of vignettes follows in which they are joined by other musicians while we see various delights that await in Entrada New Capital, one part of the wider masterplan. We see a man by a pool surrounded by people dancing; a couple entering a restaurant full of other dancing couples; two children on a leafy street watching musicians and yet more dancers; a couple standing on a bridge under the moonlight, looking down on a similar street. These lively images then give way to the swooping computer generated images of

[66] *Entrada New Capital*, n.d., https://www.youtube.com/watch?v=KkZT1mzFnck&app=desktop.

towers and parkland we have seen in the other video. We are told that Entrada New Capital is 'As Good .. As It Gets'.

It is one thing to say that this kind of promotional material echoes the dreams of colonial powers at a scale they could hardly have imagined; but what is really shared between the colonial and postcolonial escapes from Cairo? What has persisted and what has changed?

Certainly some of the stylistic tropes of the garden city can still be seen in these later plans. The curved line is preferred over the straight, indeed the curved edge of the parkland running through the plan is used to draw the eye away from the straight highway on the other side. The smaller corridors of green that run off the main central parkland also form the core of vaguely circular street arrangements that echo Maadi and Garden City, at a larger scale. The overall effect is more fluid and less regimented, the essential form seems to be the curve rather than the circle, but there is a clear relationship between the two eras.

The lifestyle portrayed in the second video may begin to help us think through the changes since the garden suburbs were built. The series of leisure pursuits the viewer is whirled through are rooted in twenty-first century models of cultural consumption, in which the wealthy are encouraged to spend their money improving their health, refining their palettes, seeking out unique places and events, and generally living a life suitable for representation through Instragram and other social media sites. Many of these pursuits also have their colonial history, of course, but in this video they are portrayed as the accomplishments of an elite defined by their position within an economy of consumption, in which capitalism produces demand for complex needs and promises to meet them. 'Entrada New Capital, when your life is as exactly as you want it to be, with no worries, and surrounded by everything you need!' the description declares in English and Arabic. This is a life that anyone can aspire to, clearly designed for an elite but at the same time holding

out the promise that it could be available to the viewer as well, no matter who they are. This is in clear contrast with the earlier garden suburbs, which were for an elite and intended to keep out anyone not of that group. These different visions of space suggest a complex history of how models of power change in relation to the evolving history of global capitalism.

There also differences in the larger nature of the developments. Whereas the earlier suburbs remained tied to Cairo, and sought merely to establish elite enclaves alongside it, in contemporary plans we see the desire to break away to a new city altogether. Heliopolis is the link between these different kinds of project, but while it was intended to be self-sufficient this did not mean that Empain wanted to supplant Cairo itself. Indeed, this might have undermined the function of a suburb: if the ordinary people of Cairo were drawn to Heliopolis, could it also offer the elite seclusion from the city? How could these goals be reconciled? The contemporary plans for a new capital raise a similar issue: if the new capital is to be different from Cairo, to what extent is it aiming to keep people out? How does this work alongside the clear need to attract new residents? These questions will need to be confronted if the new capital is to be much more than the ongoing sprawl of an urban mega-region. But in terms of how spaces are imagined and produced, there is a clear desire to create something thoroughly new. It is not enough to change Cairo, it must be escaped.

Conclusions

The Nile drew colonial era developers to it, as a site to create verdant urban spaces inspired by the garden city ideal. In Cairo, the garden city was not used as a model for a complete urban system, but as inspiration for specific elite spaces. Varied architecture on irregular, straight or circular streets was used to display the wealth and individuality of the inhabitants. In the postcolonial era, the desire for clean, green urbanism has grown into a dream of a new city altogether, through New

Cairo or new capital. The historical core of Cairo was defined by studies in the nineteenth century, but planners have often aimed to create a modern city outside this, to break from the past with the creation of a thoroughly new environment. The banks of the Nile also saw the first effective attempts to use sun power to drive the steam technology of the age. The fringes of Cairo in the early twentieth century were sites of urban and technological experimentation, where the possibilities of modernity were tested.

This chapter has taken us to the edges of Cairo, most of all to its riverine places, in order to better understand the city as an environmental construct. Much of the imagery associated with the green suburbs of Cairo persists in twenty-first century attempts to develop an alternative urban future for Egypt. The colonial attempt to break with the past and with the tangled reality of urban environments, which we have seen before in Khartoum and Aswan, manifests itself in Cairo with repeated efforts to shed the old city completely, by making new kinds of space elsewhere. Just as Shuman, in his attempt to establish solar power as a viable technology, was trying to move society to a new model of energy use, so the garden city movement, inspired by Ebenezer Howard, was an effort to restructure society itself. But in Cairo, Howard's ideals were used in the service of existing colonial and elite interests to create salubrious neighbourhoods. The goal of curing societal ills through a restructuring of space was replaced with a more limited aim of escaping the urban through the suburban. A similar critique can be levelled at the plans for a new capital: it seems to simply imagine a different society from that which actually exists in much of Cairo, and hopes to draw people to this way of life, without a clear plan for what this might involve or how Cairenes might ever earn enough to live in the shining towers of the new city.

Given that chapter three shone a light on how colonial planners write history, and critiqued the practice of seeking contemporary lessons in colonial urbanism, a

reader might challenge this chapter for falling into the same trap. Certainly it draws connections between past and present urban developments. But the aim here has not been to harvest the past for solutions to be applied to the present: I have pointed out that the scale of contemporary Cairo makes the challenges completely different from those in the early twentieth century. Rather, I have sought to uncover again how colonial modes of thought persist in present practices and imaginaries, this time by looking at urban developments themselves rather than at history writing.[67] What has been revealed by this is a persistent turning away from urban life, towards cleaner, more ordered, more legible kinds of space.[68] Just as, in the previous chapter, the expansion and repair of the Aswan Dam seemed less grand than its building, so the creation of brand new urban or suburban sites is valorised at the expense of working with an existing city.

Whereas this chapter has shifted our view of time to take in contemporary considerations, the next will plunge us into deep history in an attempt to understand how city environments are accumulated over centuries. We follow the Nile as it divides into the myriad channels of the delta, gradually dissolving the land until it finally empties into the Mediterranean. In the ports that were most colonialists' first experience of Egypt, we will end our history by thinking about how coastal areas operate as the boundaries and meeting points of regions.

[67] One might usefully think of this as a kind of haunting, see Manchanda and Salem, 'Empire's H(a)unting Grounds'.
[68] The search for legibility is the focus of Scott, *Seeing Like a State*.

Chapter 6

Making and seeing Alexandria and Port Said

> It was disappointing not to get any view of land before dark and to have to grope one's way on to an unknown continent.
>
> Emily Hornby, Tuesday 27 December 1904

The colonialists who came to the Nile valley as rulers, travellers, scholars, journalists, labourers, businessmen, traders, bankers, archaeologists, adventurers, engineers, generals, foot soldiers and so on arrived largely through the northern ports. This was the age of steam, which powered the ships and trains that carried people and goods to and from the bustling cities of Alexandria and Port Said.[1] Amelia Edwards arrived in the former, having 'drifted hither by accident' in search of warm weather.[2] But her account begins, as we saw in the previous chapter, in Shepheard's Hotel in Cairo, relegating Alexandria to a brief transit point in her journey to the Nile. Arriving at Port Said in 1904 and collecting her luggage, Emily Hornby 'thought the reports of the confusion here much exaggerated'.[3] She enjoyed witnessing the Customs House, 'a hopeless medley of East and West, all struggling with trunks, and the natives shrieking at the tops of their voices and increasing the hubbub.' The following year she did experience the difficulties she had heard of, as she and her party waited for their belongings: 'Then ensued an awful period of confusion and mental agony. We had seen all our luggage accumulated in different places, but at this critical moment all had disappeared.'[4] After much to-and-fro, and the arrival of their 'faithful dragoman' Ibrahim Gandour, the three Hornbys (Emily, Frances and Mary) were finally assembled with all their luggage. They decided to stay in Port Said one night rather than going immediately

[1] On steam technology and the place of the Suez Canal in global trade see Headrick, *The Tools of Empire*, 142–79.
[2] Edwards, *A Thousand Miles Up the Nile*, 2.
[3] Hornby, 'A Tour in Egypt, 1904-5' 880/10/13.
[4] Hornby, *A Nile Journal*, 21.

to Cairo. For travellers such as Edwards and Hornby, these ports existed primarily as places of transit, in which they left the sea and transferred to land-based means of transport. Alexandria and Port Said were part of the infrastructure of imperial travel, and more noticeable when things went wrong than when everything went according to plan.[5]

Figure 6-1 1885 map of the Nile delta; Alexandria is on the western edge, Port Said the eastern, and Cairo in the south. Note the straight line of the Suez Canal on the eastern edge of the delta. TIMEA https://scholarship.rice.edu/handle/1911/9299.

From the confluence of the Blue and White Niles we have now travelled around 1,900 miles northwards on the water. We have seen how war, rail and environment shaped urban development in Sudan's capital region; we have examined how the Aswan Dam was represented as conquering the Nile; we have traced how Cairo's suburbs became sites of urban and technological experimentation. These key places in the Nile valley have helped us understand how colonialists imagined and governed this space as a whole, and how this manifested in specific ways in each site. The relationship of this region to wider networks of empire and global trade has been mostly in the background, but emerges more fully in this chapter. In the coastal region, where the Nile finally reaches the Mediterranean, the global and local flow together.[6] The cities here are the creation of these meeting flows, these intersections of commerce, cultures,

[5] On ports as environments of transition see Michael J. Chiarappa, 'Dockside Landings and Threshold Spaces: Reckoning Architecture's Place in Marine Environmental History', *Environmental History* 18, no. 1 (1 January 2013): 12–28, https://doi.org/10.1093/envhis/ems114; on the many tangled meanings of infrastructure see Larkin, 'The Politics and Poetics of Infrastructure'; and Chattopadhyay, *Unlearning the City*.

[6] On the specific nature of coastal history see Land, 'Review Essay'; Worthington, *The New Coastal History: Cultural and Environmental Perspectives from Scotland and beyond*.

peoples, languages and environments.[7] This final study traces how Alexandria and Port Said acted as mediators in the imperial system, spaces where the Nile valley region we have been studying connects to the wider world.

This chapter also extends the temporal range of analysis. The tangled histories of urbanism, environment and infrastructure that we have traced may play out over a few years or decades, but they also connect to far deeper histories operating over centuries or millennia.[8] One of the ways in which increased sensitivity to environmental modes of analysis can challenge conventional histories is by encouraging us to take account of longer time periods.[9] Humans have been (re)making the environment of the Mediterranean coast for longer than we have written records. Every new layer of building and habitation must respond in some way to what went before, even if this response is rejection. The two cities studied here have different places in this long history: Port Said is thoroughly modern, a creation of nineteenth century European power; Alexandria was founded by Alexander the Great in the fourth century BC, and carries the traces of centuries of change since. This chapter begins by approaching each city as a constructed environment, before reconsidering the role of violence in urban space, through the bombardment of Alexandria by British forces in 1882 and the power of industrial strikes in Port Said. The next section examines the different cultural constructions of each city, contrasting the literary mirage of Alexandria to darker visions of sin in

[7] On ports in imperial global history see Sujit Sivasundaram, 'Towards a Critical History of Connection: The Port of Colombo, the Geographical "Circuit," and the Visual Politics of New Imperialism, Ca. 1880–1914', *Comparative Studies in Society and History* 59, no. 2 (April 2017): 346–84, https://doi.org/10.1017/S001041751700007X; for a networked reading of Alexandria see Lucia Carminati, 'Alexandria, 1898: Nodes, Networks, and Scales in Nineteenth-Century Egypt and the Mediterranean', *Comparative Studies in Society and History* 59, no. 1 (January 2017): 127–53, https://doi.org/10.1017/S0010417516000554.

[8] The point that different kinds of temporality unfold alongside one another, interacting to produce specific histories, is not itself new. It was a key theme of the annales school, perhaps most thoroughly put forward in Fernand Braudel, *The Mediterranean and the Mediterranean World in the Age of Philip II*, trans. Sian Reynolds, English translation of second revised edition, paperback edition (London: Fontana, 1975) the flaw in this kind of work was that nature or the environment were often treated as essentially eternal and static, rather than also undergoing radical changes but at different speeds. Increasing awareness of contemporary and historical climate change has thoroughly undermined this assumption; on various ways of conceptualising time and temporality see Gange, 'Unholy Water'.

[9] Chakrabarty, 'The Climate of History' see especially the discussion of the second thesis, 207-212.

Port Said. The final section returns us to the power of the town plan, through William McLean's designs for Alexandria. Many of the themes of chapter three return here, with different features in these cities, helping us cultivate a more nuanced understanding of what is general and what specific in the account we have developed so far. These sections essentially cover three different ways of knowing the colonial port city: through military cartography, literary and visual culture, and town planning.

I. Making urban environments

The opening of the Suez Canal on 17 November 1869 reshaped the global geographies of trade. Linking the Red Sea to the Mediterranean, the canal created a much shorter route between the Indian Ocean and the dominant powers of western Europe than any that had previously existed.

Figure 6-2 Satellite images of Alexandria (left) and Port Said (right) in their surroundings. NASA.

The Nile delta region, that had long been a meeting point of various regional geographies, was transformed into a global crossroads. After opening the canal, Khedive Ismail Pasha is said to have declared: 'My country is no longer in Africa. I have made it part of Europe.'[10] An engineering feat was presented not simply as

[10] Valeska Huber, 'Connecting Colonial Seas: The "international Colonisation" of Port Said and the Suez Canal during and after the First World War', *European Review of History: Revue Europeenne D'histoire* 19, no. 1 (February 2012): 144, https://doi.org/10.1080/13507486.2012.643612.

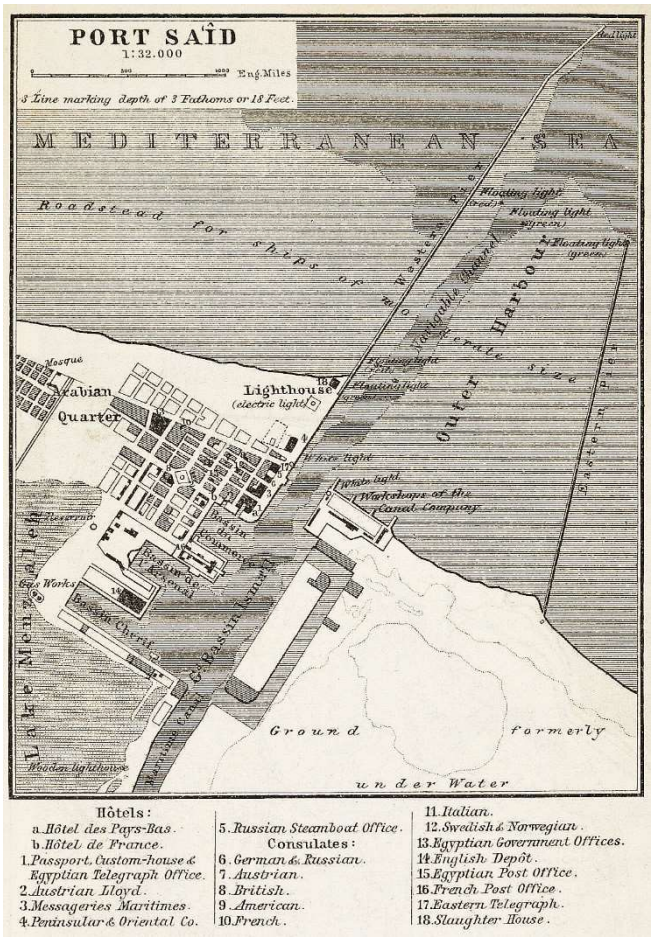

Figure 6-3 1885 Baedeker map of Port Said, TIMEA https://scholarship.rice.edu/handle/1911/9317.

creating new economic opportunities, but as changing Egypt's position in the world. And not only in the world, but in time as well: implicit in the Khedive's phrase is a sense that to be African is to be held back by the past, whereas to be thoroughly modern is to enter into a culture at once European and global.[11] Thus, a technological transformation of the landscape, such as the Suez Canal or the Aswan Dam, might enable Egypt to exceed the limitations of its African geography by joining the European future. Space and time are thoroughly intertwined in such a claim.

The Nile has been laying down the sediment of its delta for around 6,500 years.[12] North of Cairo, it divides into two main channels which run through a shallow, flat environment to the promontories of Damietta in the east and Rosetta in the west, where the waters finally reach the Mediterranean. The land through which these two branches run consists of earth dragged northwards by the Nile during the flood, the nutrient-rich sediment that makes the banks of the main river so fertile. This process has created a green wetland, which stands in stark contrast to the

[11] On associations between Africa and backwardness, and Europe and modernity, see Mbembe, *Critique of Black Reason*; on the global dominance of European culture see Chakrabarty, *Provincializing Europe*; on Egypt's particular place within these ideas see Mitchell, *Colonising Egypt*; and *Rule of Experts*.

[12] Waleed Hamza, 'The Nile Delta', in *The Nile: Origins, Environments, Limnology and Human Use*, ed. Henri J. Dumont, Monographiae Biologicae 89 (Dordrecht, Netherlands: Springer, 2009), 77. It may be worth noting that this means the Great Pyramid in Giza is closer in time to the formation of the Nile delta than it is to today.

southern desert. Much of the Nile's water is retained by lakes, agriculture and side-channels rather than flowing freely into the sea. Even today, 65% of Egypt's agricultural productivity comes from the delta, and that despite the changes brought about by the Aswan High Dam and other hydrological projects.[13] Great lakes separated from the sea by narrow strips of dusty earth characterise the delta coast, and this makes for a distinctive urban setting in which the built environment is squeezed between lake and sea. Lake Menzalleh lies to the south and west of Port Said, and when the town was first laid out the water constrained it quite closely, as can be seen in **figure 6-3**. In the twentieth century the town has expanded to claim more land from both lake and sea. Lake Mariout skirts the southern borders of Alexandria, restricting the city to a long coastal strip, and we will see below how colonial planners elongated this coastal strip. Port Said is further defined by its relationship to an artificial waterscape.

Building the Suez Canal involved creating more than just a waterway. New towns were built alongside it to house workers during construction and to service its future needs. Just as the Nile had its cities, so Egypt's new artificial waterway would have a built environment to match. Ismailia was imagined to be the pinnacle among these new towns, a civilised oasis of

Figure 6-4 ISMAILIA - Office of the Suez Canal Co., late nineteenth or early twentieth century, The Cairo Postcard Trust, Rare Books and Special Collections Library, American University in Cairo, Postc_B1_93_a http://digitalcollections.aucegypt.edu/cdm/compoundobj

[13] The Damietta branch no longer reaches the sea at all; a small amount of water reaches the sea through the Rosetta branch, but the vast majority of water reaching the Mediterranean now does so through lakes and effluent, not directly from the river's ancient branches. Hamza, 82.

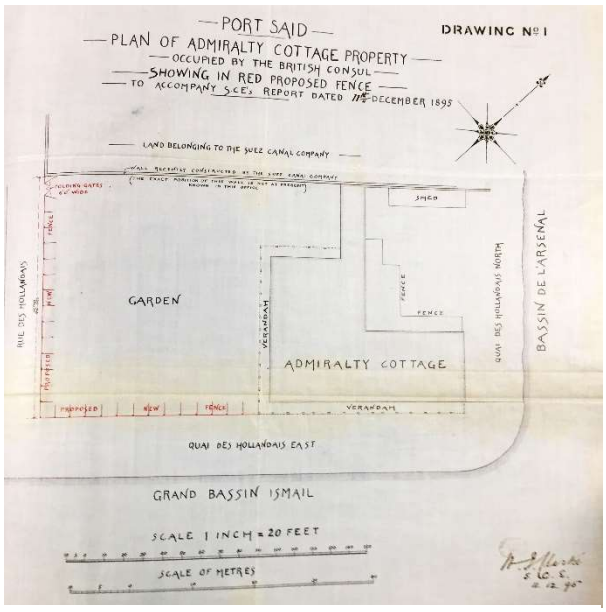

Figure 6-5 British Admiralty Property in Port Said, cottage of the British Consul at the junction of Grand Basin Ismail and Basin de l'Arsenal, 1895. British National Archives MFQ 20.

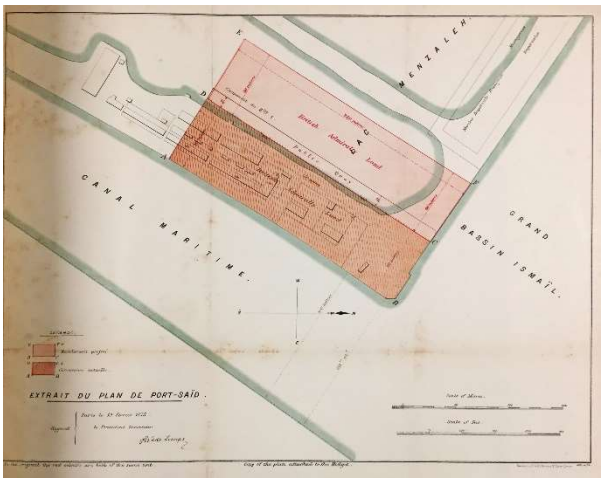

Figure 6-6 British Admiralty Property in Port Said, at the junction of the Canal Maritime and the Grand Basin Ismail, 1895. British National Archives MFQ 20.

European order.[14] Something of this can be seen in **figure 6-4**, in which oriental detail is combined with regularity and fecundity in the offices of the Suez Canal Company.[15] The plain, rounded arches over the windows contrast with the heavily decorated ogee arches that support the roof over the veranda. Exotic flowers flourish, and the whole scene is surveyed by a bust of Ferdinand de Lesseps, the founder of the company and chief developer of the canal. Among the other new towns, Port Said served a vital function as the gateway to the Mediterranean, the meeting point of the Atlantic and Indian Ocean trading regions. Although it was not planned to be as grand as Ismailia, it became far more significant.[16] Sandwiched between lakes and the sea, Port Said was built on essentially barren land, a city as much an artificial creation as the Suez Canal itself. Workers contended with restless sand and water to establish an urban environment just as tenuous as any we have yet seen. **Figures 6-5** and **6-6** show British admiralty property in Port Said, occupying key locations at the intersections of the canals that formed the dock of the town

[14] Lucia Carminati, 'Port Said and Ismailia as Desert Marvels: Delusion and Frustration on the Isthmus of Suez, 1859-1869', *Journal of Urban History*, 9 January 2019, 96144218821342, https://doi.org/10.1177/0096144218821342.

[15] On postcards as evidence of port histories see Sivasundaram, 'Towards a Critical History of Connection'.

[16] Carminati, 'Port Said and Ismailia as Desert Marvels'.

and structured the urban layout. This was a city looking out to the water that carried goods and people from across the world.

Figure 6-7 Ras El Tin Palace, Alexandria, 1931, Bundesarchiv, Bild 102-12200
https://upload.wikimedia.org/wikipedia/commons/7/7d/Bundesarchiv_Bild_102-12200%2C_Alexandria%2C_Ras-El-Tine-Palast.jpg

To the west of the Nile delta, Alexandria embodies a far older environmental history. It was once a city on one large bay, but during the reign of Ptolemy II (third century BC) a road was built to the island of Pharos in the centre of the bay.[17] Over subsequent centuries, the motion of the sea deposited more earth on the banks, so that one bay has become two. The city was a Roman provincial capital, but was less important under Arab rule, as a new capital Al-Fustat was built inland. This would grow into Cairo. By the start of the nineteenth century, Alexandria had shrunk greatly in population and significance. The history of modern Egypt is usually taken to start from the rule of Mohammed Ali, who came to power in 1805. Notionally a governor for the Ottoman Empire, Ali in fact ruled his territories as if he were a monarch.[18] He reinvigorated Alexandria's fortunes, keen to develop the city as a trading port to sell Egyptian produce to Europeans.[19] The canal connecting the city to the Nile was re-dug, new docks were built and a fleet constructed. The new Ras El-Tin Palace looked out to the sea, signalling that this newly emergent power looked outwards to the world, putting its back to the desert. Viewed from Alexandria's western bay, as in **figure 6-7**, it seems to float directly on the water,

[17] What follows draws on Hassan Abdel-Salam, 'The Historical Evolution and Present Morphology of Alexandria, Egypt', *Planning Perspectives* 10, no. 2 (1 April 1995): 173–98, https://doi.org/10.1080/02665439508725818.
[18] It should be said that the notion of calling all these territories 'Egypt' comes later: under the Ottoman system regions were named for their capitals, so Mohammed Ali was the governor of Cairo. Mitchell, *Rule of Experts*.
[19] Abdel-Salam, 'The Historical Evolution and Present Morphology of Alexandria, Egypt'.

in a manner reminiscent of the Doge's Palace in Venice, on the other side of the Mediterranean. During the nineteenth century, many communities took up residence in Alexandria, taking advantage of the 'capitulations' regime whereby Europeans were exempt from various taxes and local laws, and were legally under courts run by their own nation.[20] Although this originated in agreements with the Ottoman Empire it developed to a far greater extent in nineteenth-century Egypt than elsewhere, as increasingly powerful European empires asserted themselves and used debt to secure their privileges.[21] In 1882, Britain took control of Egypt with a brief military campaign that began with the bombardment of Alexandria. The ability to destroy the built environment laid the foundation of British domination of the region. The population of the city by the late nineteenth century was distinctively mixed, and almost entirely made-up of relatively new arrivals either from up the Nile or across the Mediterranean. This cosmopolitanism has been much celebrated in twentieth century literature, of which more below.[22]

[20] The idea that everyone has a clearly identifiable nationality is, of course, problematic. The actual application of this system was, therefore, full of complex disputes and ambiguous cases. See Hanley, *Identifying with Nationality*.

[21] Hanley; Whidden, *Egypt: British Colony, Imperial Capital*; on the architecture of British communities in nineteenth century Alexandria see Crinson, *Empire Building*.

[22] Dunn, 'Imagining Alexandria'.

Two towers can help us think about these two histories. The column in Alexandria that came to be known, erroneously, as Pompey's Pillar, was built in 297 AD to mark the victory of Emperor Diocletian over a revolt in the town. Towering more than 26 metres over its surroundings, it surely stands an example of the assertion of power through verticality. It also has an important touristic role in a city that lacks much in the way of ancient monuments compared with the rest of Egypt. There are stories of nineteenth century tourists climbing it using a rope-ladder flown up using a kite, and taking refreshments while looking down upon the city.[23] Sitting on the pedestal of a long-gone Roman statue, looking north to the Mediterranean, east to the delta, or south and west to the Egyptian desert beyond Lake Mariout, these visitors could make a vista of Egypt, part of the long process of conquering the country through images.[24] They might have imagined the British as the new Romans, bringing order to the supposed chaos of the Orient. The classical tradition in architecture was, of course, in many ways about positioning modern powers as the natural successors of ancient empires, and British colonial architecture across the world tapped into this heritage.[25] This tower is, thus, part of the history of the Western gaze, both as part of the skyline of Alexandria and as a viewpoint itself.

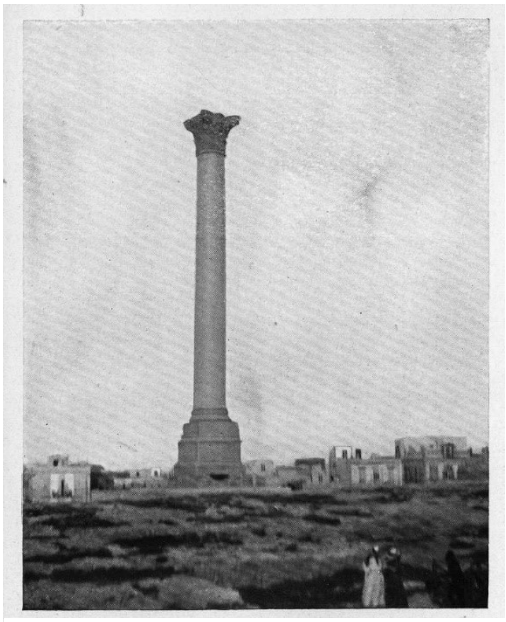

Figure 6-8 Pompey's Pillar at Alexandria, 1911. TIMEA https://scholarship.rice.edu/handle/1911/21617.

[23] Slightly different versions of this can be found in IRENAEUS, 'The Pillar and the Needle.: Pompey's Pillar and Cleopatra's Needle.', *New York Observer and Chronicle (1833-1912); New York*, 4 January 1855; and C, 'Alexandria, Ancient and Modern. Pompey's Pillar.', *Arthur's Illustrated Home Magazine (1873-1879); Philadelphia*, September 1875 in the latter this seems to be one occurrence involving eight tourists, whereas in the 1850s it was being described as a general issue among 'Ambitious visiters'.

[24] Mitchell, *Colonising Egypt*.

[25] On the classicism of Herbert Baker's colonial architecture, for example, see Bremner, 'Stones of Empire', 103–11; This is not to say that classicism was always the dominant style of the British Empire, see for example Longair, 'Visions of the Global'.

Figure 6-9 Port Said Lighthouse in 2018, photograph by the author.

Figure 6-10 Port Said Lighthouse 1930s https://commons.wikimedia.org/wiki/File:Port_Said_1930s_01.jpg.

Read in terms of its relationship to the shifting delta environment, Port Said lighthouse can help us reimagine the city as a mobile zone of environmental interaction. 56 metres tall and completed in 1869, it was one of the first structures in the world built from iron-reinforced concrete.[26] Its state of the art electric light guided ships around the new harbour. The tower, which once stood on the northern periphery of the town, has now been surrounded by urban growth. Into the early twentieth century, the delta was expanding into the sea, and Port Said followed. Its streets and stores expanded northwards into what was once an outer harbour, so that the lighthouse can now be found out of sight of the sea, surrounded by later buildings. What was once a herald of modernity has rapidly become an incongruous anachronism in the mobile urbanism of the delta littoral.

II. Power and violence

The British occupation of Egypt began with urban violence. Just as the history of colonial Khartoum begins on the rails that carried Kitchener's troops across the desert, so the history of British rule in Cairo begins in the gunboats that shelled

[26] Piaton, 'Les phares d'Égypte'; architectural historians have been interested in the use of iron reinforced concrete for a long time, the classic work being Sigfried Giedion, *Building in France, Building in Iron, Building in Ferro-Concrete*, Texts & Documents: Architecture (Santa Monica, California: The Getty Center for the History of Art and the Humanities, 1995).

Alexandria on 11 July 1882.[27] A month before, El Ajjan, an Arabic-speaking Egyptian youth who made his living transporting people on his donkey, had a dispute with a Maltese passenger about his fare. The passenger drew a knife and stabbed El Ajjan. Other Arabs came to El Ajjan's aid, while a Greek bakery owner and an Italian policeman also attempted to intervene. The Greek was killed and the Italian injured. Shots were heard from nearby European houses. For the next few hours, angry crowds rushed through the streets of Alexandria, as the Arab community vented its anger against the 'foreign' sections of the city's population.[28] Upwards of fifty people were killed in one afternoon. Early reports in the British press were fairly muted, but soon more details emerged and increasingly the coverage became lurid and exaggerated. Egypt was portrayed as ungovernable.[29] The roar of the guns in July was, in part, a reply to the roar of the crowds in June.

Historians have long argued about the reasons behind the British invasion.[30] The official justification was to maintain the security of Suez Canal and the wider empire. Contemporary critics of the British, such as Wilfrid Scawen Blunt accused them of manipulating events along with the Khedive to crush the possibility of a more independent Egypt emerging.[31] To Blunt, Ahmed Urabi, the leading figure in the military revolt against the Khedive in 1879 who had become a leading minister, offered the possibility of modernising Egypt's politics. To the British government he seemed largely a menace, because he could not be controlled as easily as Khedive

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[27] This is not at all to say that British impact on the built environment begins with occupation. In fact Alexandria was influenced by many European traditions before and after its period in the empire. On British architecture there before occupation see Crinson, *Empire Building*.

[28] i.e. those who lived in Egypt, especially Alexandria itself, under the capitulations regime as Italian, French, British (predominantly Maltese) or German citizens. This included people born in Egypt, as nationality was largely treated as heritable.

[29] This account of events and press coverage follows M. E. Chamberlain, 'The Alexandria Massacre of 11 June 1882 and the British Occupation of Egypt', *Middle Eastern Studies* 13, no. 1 (1977): 14–39.

[30] As well as those discussed specifically here, see Alexander Schölch, 'The "Men on the Spot" and the English Occupation of Egypt in 1882', *The Historical Journal* 19, no. 3 (1976): 773–85; Chamberlain, 'The Alexandria Massacre of 11 June 1882 and the British Occupation of Egypt'; John S. Galbraith and Afaf Lutfi al-Sayyid-Marsot, 'The British Occupation of Egypt: Another View', *International Journal of Middle East Studies* 9, no. 4 (1978): 471–88.

[31] Wilfrid Scawen Blunt, *Secret History of the English Occupation of Egypt: Being a Personal Narrative of Events* (London: T. Fisher Unwin, 1907); Michael D. Berdine, *The Accidental Tourist: Wilfrid Scawen Blunt and the British Invasion of Egypt in 1882*, Middle East Studies (New York and London: Routledge, 2005).

Tewfik. According to historian A. G. Hopkins, there was a paradox at the heart of the attitude to Egypt common among the European powers: 'They wanted a government which was both stable and co-operative.'[32] In reality any government that simply followed European wishes would reduce its powerbase in Egypt and so become less stable; any which worked to cultivate its position in Egypt would be likely to go against European priorities. Hopkins argues that Britain's interest in Egypt was largely economic, pointing out that 80% of Egyptian export went to Britain.[33] More recently, Dan Halvorson has put prestige at the centre of British motivations, arguing that only this can fully account for events.[34] He acknowledges financial interests and the importance of the canal, but sees these as less important issues.[35] The use of the canal as the official justification seems to have been pitched to appeal to parliament and the wider public, rather than to have been in itself the heart of the matter. Although not part of the official rationale, the 11 June rioting and its representation in the British press contributed to the impression that Egypt was unstable. The exact ranking of the causes is less important here than their general character. The British occupation of Egypt was sparked by some combination of: economic self-interest; a desire to defend national prestige, especially in rivalry with France; the particular views and responses of politicians, reporters and officials in Cairo, London and Alexandria itself; and the defence of Suez, the key route through to India. Linking all of these is a fear that Egypt might become ungovernable, both in the sense of no longer abiding by European requests and in the sense of danger on the streets. The canal was called on as a symbol of this fear: if Port Said rioted like Alexandria, could trade be kept open? And if the economy suffered, how could debt repayments to European creditors be

[32] A. G. Hopkins, 'The Victorians and Africa: A Reconsideration of the Occupation of Egypt, 1882', *The Journal of African History* 27, no. 2 (1986): 376.
[33] Hopkins, 379.
[34] Dan Halvorson, 'Prestige, Prudence and Public Opinion in the 1882 British Occupation of Egypt', *Australian Journal of Politics & History* 56, no. 3 (2010): 423–40, https://doi.org/10.1111/j.1467-8497.2010.01563.x.
[35] Halvorson, 424.

guaranteed? Speaking of protecting the canal could prompt parliamentarians and journalists to entertain these fears, and so make them more amenable to invasion.

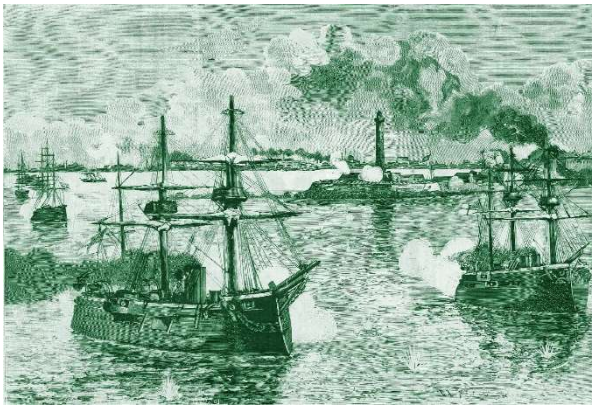

Figure 6-11 Bombardment of Alexandria in Le Monde Illustré 1882. https://commons.wikimedia.org/wiki/File:Bombardamento_Alessandria_1882.jpg

The ships that opened fire had been stationed in Alexandria since May. Originally a joint Anglo-French force had been sent, intended to be a show of European power that would dissuade Urabi or any other would-be rebels from acting against the Khedive. The Egyptian military had been working to restore the forts protecting Alexandria, but suspended this when the fleet arrived. They resumed work in July, however, and did not temporarily surrender the forts as demanded by the Europeans. The French, who in earlier years had been the more aggressive partner, were unwilling to incite conflict in Egypt and so their ships left Alexandria. The British fleet, under Admiral Beauchamp Seymour, remained. Claiming that the forts were a danger to the fleet, Seymour ordered his ships to open fire on them on the morning of 11 July. Urabi's forces withdrew while the naval guns pummelled the city. The British press celebrated the attack as a just response to the June riots, going against the official line that the shelling was an act of self-defence.[36] **Figure 6-11** shows forts and ships exchanging fire while the city burns in the background. Italian photographer Luigi Fiorillo recorded the damage to the city's buildings, notably the French and British consulates.[37] Visual culture scholar Stefka Hristova has read how

[36] Halvorson, 436–37.

[37] These images can be viewed online as part of the American University in Cairo's digital collections: http://digitalcollections.aucegypt.edu/cdm/compoundobject/collection/p15795coll9/id/109/show/60/rec/36

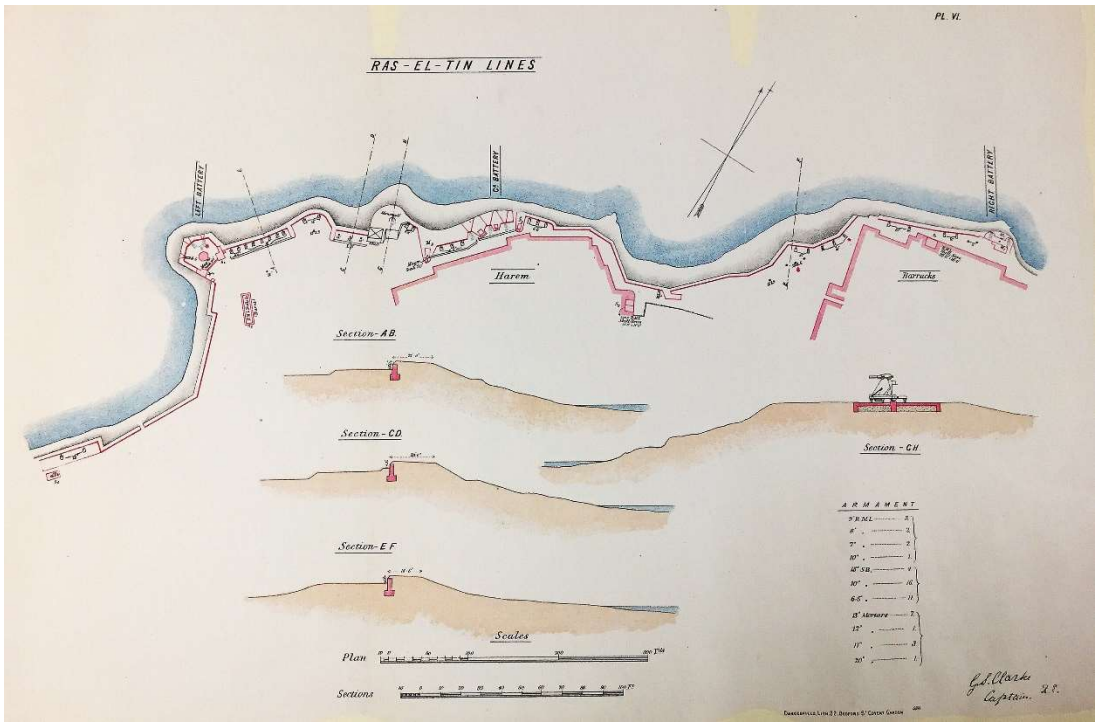

Figure 6-12 Ras-El-Tin Lines, 1883. British National Archives MPH 835.

rubble is used in these photographs to think through death and destruction.[38] In comparing representations of modern urban destruction to photographs of ancient ruins, she draws on Achille Mbembe's term necropolitics.[39] Real power, Mbembe argues, resides in deciding who lives and who dies. Fiorillo's images, as read by Hristova, lay bare the broken bones of the cityscape as a way to articulate the loss of war. Architectural ruins stand in for the human bodies that can also be found in the edges of the photographs, but which seem insignificant compared to the skeletal remains of buildings around them. The role of the colonised Arab, in this visual language, was to be quietly swept aside by the power of the West.[40]

The military itself had a distinctive visual language. After the fall of Alexandria, Captain Clarke of the Royal Engineers prepared plans of the coastal forts.[41] These

[38] Stefka Hristova, 'Ruin, Rubble, and the Necropolitics of History.', *Transformations*, no. 28 (2016), http://www.transformationsjournal.org/issue-28/.

[39] First articulated in Mbembe, 'Necropolitics', 1 January 2003; and later developed in *Necropolitics*, 2019.

[40] Hristova, 'Ruin, Rubble, and the Necropolitics of History.', 8.

[41] This section focus on one set of images, but for a wider range of sources on military views of Alexandria see British National Archives files MFQ 1/869/21; WO 33/40/1883/925; WO 33/40/1883/925A; WO 106/13 (from which the files examined here were extracted into MPH 1/835); WO 78/2386/6-12.

twenty-three images provide the information deemed essential for military intelligence, in a communicative mode somewhat similar to the map of Sudan's capital region examined in chapter three. The defences at Ras El-Tin covered the largest area, and seven pictures record these. The remaining sixteen images are more evenly divided between smaller installations.

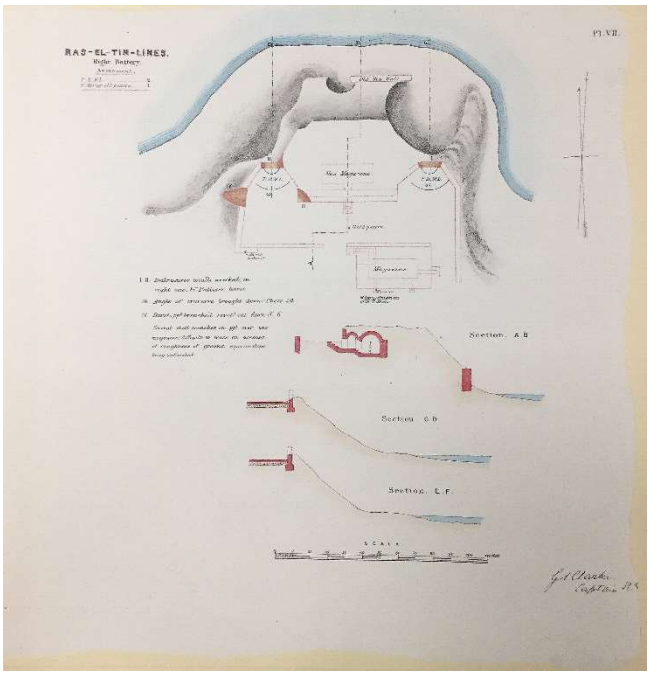

Figure 6-13 Ras-El-Tin lines, 1883. British National Archives MPH 835.

Three of the Ras El-Tin images give a flavour of the general style. **Figure 6-12** shows a plan of the defences and cross-sections of four gun emplacements. Only the coast and the defences are shown, the city behind is entirely absent. **Figure 6-13** is a closer view of a Ra El-Tin gun battery, and includes stylised but carefully rendered topographic information. Again, there are cross-sections of the emplacement. **Figure 6-14** is of the fort of Ras El-Tin itself, and includes more details of buildings than the other two, but only because

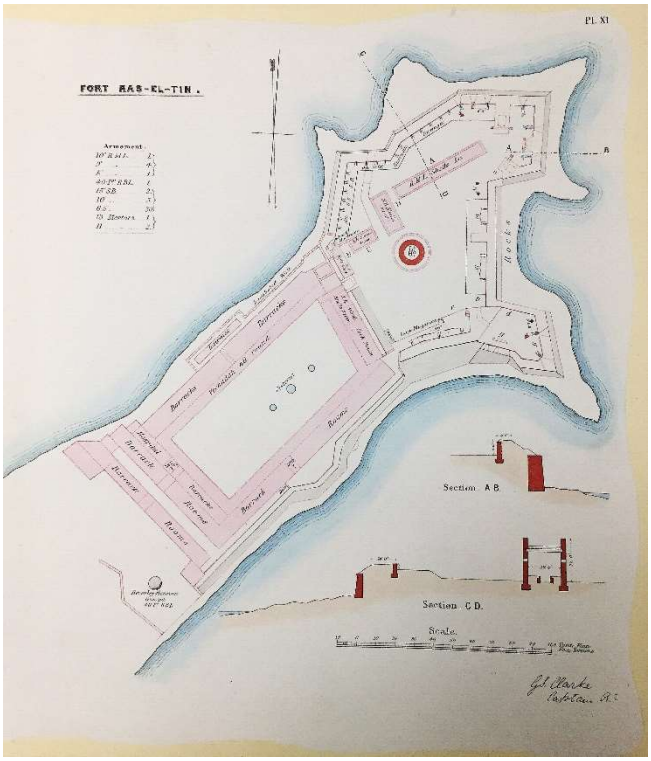

Figure 6-14 Fort Ras-El-Tin, 1883. British National Archives MPH 835.

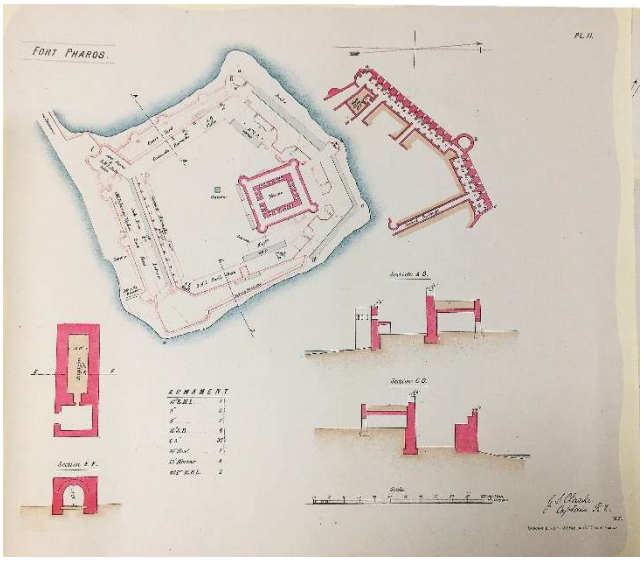

Figure 6-15 Fort Pharos, 1883. British National Archives MPH 835.

these are military structures such as barracks. This time the cross-sections of batteries are in the empty sea.

Pharos, once an island and now in effect the headland of a peninsula, has been fortified in various ways for centuries. Ras El-Tin, on the westward side of the island facing the bay, is one part of this history; at the eastern end is the Citadel of Qaitbay, which has defended Alexandria since the fifteenth century AD. It was modernised under Mohammed Ali, and in Clarke's images is referred to simply as Fort Pharos. In **figure 6-15** the section marked as a mosque is the restored citadel itself, while the surrounding defences were largely nineteenth century. The image also records wall sections, an additional plan of part of the walls, and armament details. Unless the viewer already knows where these defences are, there is little information to help relate them to each other. This would have been stitched together with urban and military maps, and written reports, to ground these detailed records more securely.

Clarke's images show military installations divorced from their urban setting, reduced to the bare essentials of line and topography. The city of Alexandria is an empty white space, used for additional illustrations and legends. These might seem not to be urban images at all. Within the imperialist military imaginary, the city was only the setting for a series of defensive installations, and it was these that needed recording. Just as James C. Scott has argued that the modern state seeks to make legible certain features of a nation and economy in order to ease the exercise of governance, so the admiralty and army wished to understand not the full

complexity of an urban setting but a city's specific defensive capabilities.[42] These images were a tool of military force, and as such formed part of the infrastructure of necropolitics.

Military force and riots were not the only forms of action that shaped colonial cities. The coal-heavers of Port Said were the first large group of Egyptian wage labourers to go on strike, in 1882.[43] John Chalcroft has used documents produced by strikers to read the relationship between labour movements and the state, but the coal-heavers also shed light on the material nature of power in the colonial ports. These men were engaged in unloading coal provided by colliers and loading it into ships where it would be burnt to provide the steam that powered global trade and travel. Coal also fuelled the railway trains and river boats that connected the coastal region to the rest of Egypt and the greater Nile valley. Human muscle was vital to this coal system, in mining it from the earth and in transporting it, particularly in transferring the coal from the vehicle carrying it to the one that would actually burn it. The labourers in Port Said built their own homes from wood, reeds and clay bricks, west of the main town.[44] The workers grievances, which brought about several strikes and other, less organised, forms of protest in the last decades of the nineteenth century and first decades of the twentieth, generally focused on the behaviour of the headmen who ran the coal-heaving operation. But the significance of their strikes, the very fact that they were able to make their views heard at all, rested in part on the importance of Port Said as a town and in their own significance within this system.

The urban form of both Alexandria and Port Said was deeply entwined with the delta environment and its waterways, both natural and artificial. The place of these

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[42] Scott, *Seeing Like a State*.

[43] John Chalcraft, 'The Coal Heavers of Port Sa'id: State-Making and Worker Protest, 1869-1914', *International Labor and Working-Class History*, no. 60 (2001): 110–24; for a wider history of labour in modern Egypt see Joel Beinin and Zachary Lockman, *Workers on the Nile: Nationalism, Communism, Islam, and the Egyptian Working Class, 1882-1954* (London: Tauris, 1988).

[44] Chalcraft, 'The Coal Heavers of Port Sa'id', 112.

cities within regional and global trade networks inflated their importance to the Nile valley as a whole as it was through this coastal region that almost all people and goods would enter. From further south, some eastward trade flowed through Port Sudan to the Red Sea and Indian Ocean, but this route was far less significant than the delta cities. All of this meant that what happened in these cities took on broader significance: gunboats here could control Egypt; riots could gain global press coverage; strikes could threaten notable economic damage. Part of the significance of the coastal environment, then, is as a concentrating factor, a bundling together of a particularly dense flow of events and possibilities that inflates the importance of ports.

These dense sites are also key parts of cultural production, and it is to this that we now turn. The ways in which cities are imagined, as we have seen in earlier chapters, is itself part of the making of urban places. Alexandria is one of the most heavily imagined cities in modern Western culture, but at the same time has been peripheral in visions of Egypt proper or the Nile valley as a whole. We have already mentioned that travellers such as Emily Hornby and Amelia Edwards tended to downplay these sites of arrival to concentrate on the journey south of Cairo, but now we will look more closely at the literary production of Alexandria and Port Said.

Figure 6-16 Metropole Hotel, 2018. Photograph by the author.

III. Cultural constructions

Anyone writing about Alexandria must consider the mirage that writing on the city has produced. The literary Alexandria – polyglot, colonial, Westernised, a site where the Orient was both encountered and displayed – has been called 'uncanny…, a disturbing

phantom, a ghostly memory of a mythical city which may never have existed.'[45] Veronica Della Dora goes on to point out that much of the literature on the city has been penned by exiles from it, often looking back from adulthood to distant childhood years. Under the nationalist government of Gamal Nasser in the 1950s, European communities were expelled from Egypt, producing a generation of writers whose memories of Alexandria were bound-up with the trauma of exile. Yet the city was already being established as a literary site by earlier writers; there is more to its place in culture than the nostalgia of the exile. E. M. Forster and Lawrence Durrell, among the most influential colonial-era writers in English on Alexandria, were heavily influenced by the Greek poet Constantine Cavafy, who lived most of his life in the city. For the last twenty years he lived in Le Metropole Hotel, built in 1902. Cavafy was among those who began the work of transforming this booming port town into a literary dream:

One Night

The room was cheap and sordid,
hidden above the suspect taverna.
From the window you could see the alley,
dirty and narrow. From below
came the voices of workmen
playing cards, enjoying themselves.

And there on that common, humble bed
I had love's body, had those intoxicating lips,
red and sensual,
red lips of such intoxication
that now as I write, after so many years,
in my lonely house, I'm drunk with passion again.[46]

It is not the city of stone monuments that is celebrated here, but rather the intermingled life of its guesthouses. Writers such as Cavafy transformed the city's

[45] Dora, 'The Rhetoric of Nostalgia', 209; on the Western gaze in Egypt see Said, *Orientalism*; and Mitchell, *Colonising Egypt*.
[46] C. P. Cavafy, translated by Edmund Keeley and Philip Sherrard https://www.onassis.org/initiatives/cavafy-archive/the-canon/one-night.

alleys, corners, brothels and tombs into literary monuments. The Alexandria of the exile's imagination is also a city built by earlier writers.

Port Said too, had its rowdy night-life, but lacked a Cavafy to celebrate it. Rudyard Kipling painted a dark picture of its vice-ridden streets in his first novel:

> Dick loitered in Cairo, Alexandria, Ismailia, and Port Said – especially Port Said. There is iniquity in many parts of the world, and vice in all, but the concentrated essence of all the iniquities and all the vices in all the continents finds itself at Port Said. And through the heart of that sand-bordered hell, where the mirage flickers day long above the Bitter Lakes, move, if you will only wait, most of the men and women you have known in this life.[47]

The romantic haze that settled on Alexandria seems not to have reached Port Said. Perhaps the clear modernity of the latter, the knowledge that before 1859 the Isthmus of Suez was little more than scrubby desert, robbed the town of sense of antiquity available in most other Egyptian cities in one form or another.[48] Even Ismaila, one of the other new towns built for the canal, was intended to be a more engaging, cultural city, while Port Said was to be the major site of trade and commerce. Valeska Huber has traced the history of how, despite the warm reports of early visitors to Ismaila, it was the port that became by far the more successful city.[49] The canal that re-engineered global trade also produced a new global city, another of these great nodes in the global network of modernity.

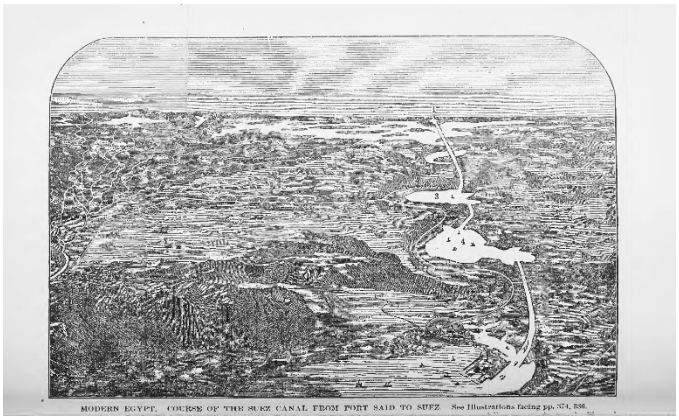

Figure 6-17 Suez Canal from Port Said to Suez, from Rev. Joesph Angus The Bible Hand-Book: an introduction to the study of sacred scripture *(Philadelphia: J. Fagan & Son, 1883). Facing page 368.*

[47] Rudyard Kipling, *The Light That Failed* (London and New York: MacMillan and Co., 1891), 36.

[48] Cairo was busy defining its architectural heritage in the late nineteenth century, producing a new history for the city. This has been studied by Sanders, *Creating Medieval Cairo*; see also AlSayyad, Bierman, and Rabbat, *Making Cairo Medieval*.

[49] Huber, 'Connecting Colonial Seas'.

Readers of the illustrated edition of *The Bible Hand-Book* published by J. Fagan & Son of Philadelphia in 1883 could find a different vision of Port Said. The images in this volume range from ancient texts and scenes to the modern Middle East, including the development of the Suez Canal. These seem to be visions of the improvement of the modern world, and the Egypt images show a fascination with the making of modernity. There are three images related to Port Said. **Figure 6-17** shows the Suez Canal from Port Said to Suez, a series of thin lines of water linking lakes; in the left of the picture is the spidery outline of the Nile delta. **Figure 6-18** shows a somewhat fanciful view of the harbour at Port Said, its swooping curve matched by the curve of the canal in the background. The most complex of the images is **figure 6-19**, in which an Egyptian doorway separates the images into four panels: in the top, across the whole length of the picture, we see boats in Port Said's harbour; in the centre is a bird's-eye view of the harbour; on the left we see the dredging of the Suez Canal, the making of the environment; on the right is a view of the entrance to the canal. The doorway that frames the central panel and divides the picture features two sphinxes at its base. This picture brings together many of the perceptions of Egypt at this time: it is home to ancient sites (symbolised by the door) but is at the same time a site of commerce (the boats and bustling harbour) and infrastructural innovation (the canal and its dredging). These pictures are interested in Port Said as a physical and visual site, not as a peopled place, and so what emerges is very different from the literary visions of Cavafy and Kipling that focus on individuals and their movement. But all of these contributed to a general sense of what these ports were about, and the

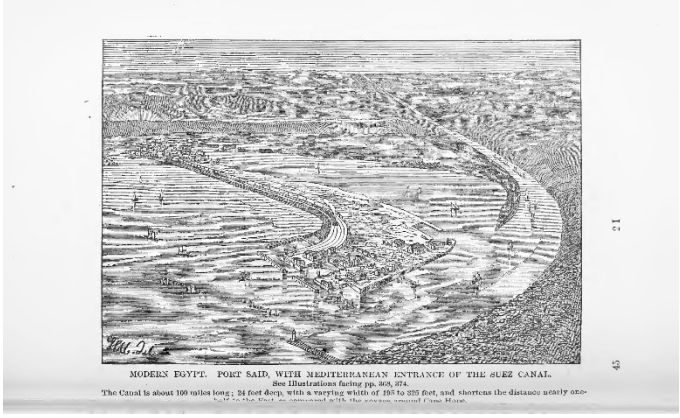
MODERN EGYPT. PORT SAID, WITH MEDITERRANEAN ENTRANCE OF THE SUEZ CANAL.
See Illustrations facing pp. 369, 374.
The Canal is about 100 miles long; 24 feet deep, with a varying width of 196 to 328 feet, and shortens the distance nearly one-

Figure 6-18 Port Said harbour, from Rev. Joesph Angus The Bible Hand-Book: an introduction to the study of sacred scripture *(Philadelphia: J. Fagan & Son, 1883). Facing page 386.*

travellers' view of them as sites of transition, threshold spaces that lacked their own clear identity, can be found reproduced in these pictures. To readers primarily interested in understanding the Bible, these visual sources also told a story about the contemporary world. It was an infrastructural world, built around trade and artificial environments such as the Suez Canal.

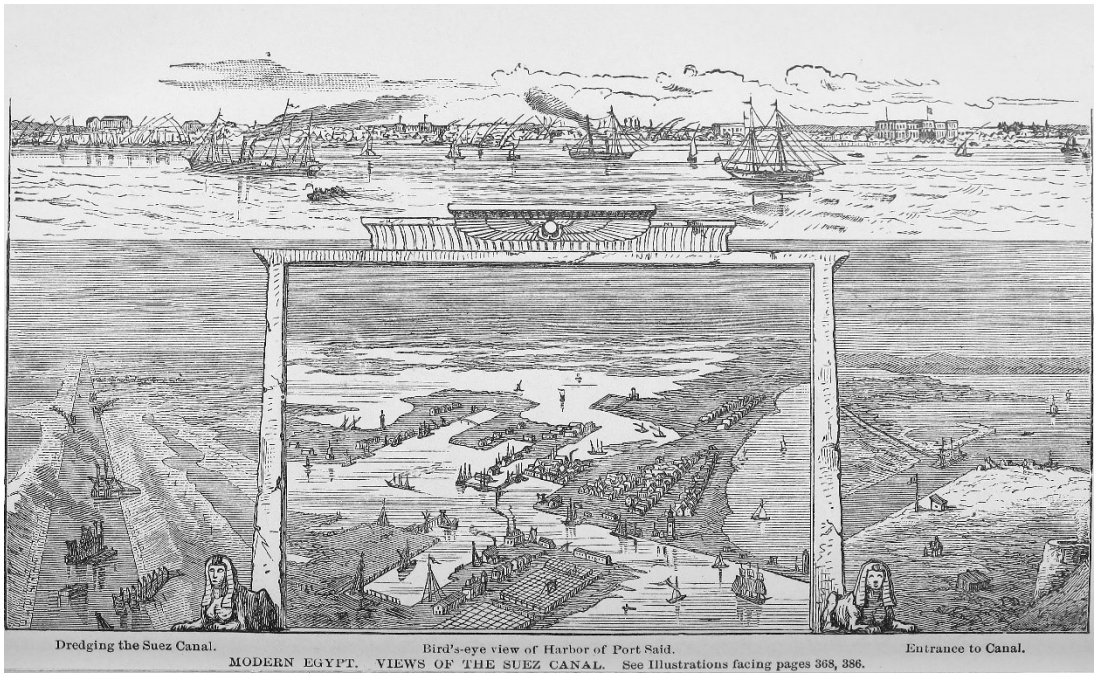

Figure 6-19 Modern Egypt, views of the Suez Canal, from Rev. Joesph Angus The Bible Hand-Book: an introduction to the study of sacred scripture *(Philadelphia: J. Fagan & Son, 1883). Facing page 374.*

These varying cultural constructions of the Mediterranean ports would have fed Western views of what these cities meant. While the continent of Africa might be considered dark and mysterious, much was known of Egypt and especially its northern cities. By contributing to this shared cultural impression, authors and illustrators added to the making of Egypt in the Western mind. It was texts such as these that began the work of making Egypt legible to the Western public, a process that contributed to making Sudan – by comparison – more alien and frightening. The journey down the Nile became a voyage from the known to the unknown, and the more that ideas of the delta were reproduced the deeper this impression became.

Knowledge of Alexandria was not only military and popular. Colonial rule saw it brought into technocratic systems of knowledge, and in the next section we see how W. H. McLean applied Western concepts of the town plan to this city poised between Europe and Africa.

IV. W. H. McLean's plan for Alexandria

We encountered William McLean in chapter three, as Khartoum's town engineer and amateur historian. His career as a town planner developed over subsequent years, and in the 1920s he studied for a PhD at Glasgow University. In his book *Regional and Town Planning* he gave accounts of his plans for Alexandria, Jerusalem and Khartoum, and used these cases to support his general arguments. In essence, this was that good town planning involved a total vision of economic and social organisation in a given place, and its relationship to wider networks. He emphasised the importance of surveying to the planning process, as the means to understand these relationships. Indeed, despite the book's title it concerned a much wider area than towns:

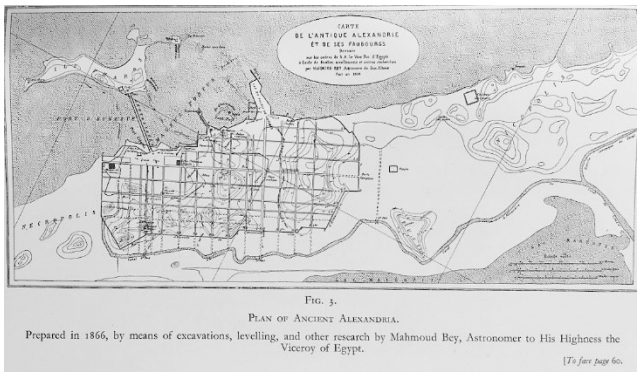

FIG. 3.
PLAN OF ANCIENT ALEXANDRIA.
Prepared in 1866, by means of excavations, levelling, and other research by Mahmoud Bey, Astronomer to His Highness the Viceroy of Egypt.
[*To face page 60.*

Figure 6-20 Plan of ancient Alexandria, from W. H. McLean Regional and Town Planning, in principle and practice *(London: The Technical Press ltd., 1930), facing page 60.*

> The term "town planning" is much used to denote all stages or spheres of the work, and this is probably because the science began with the problem of the towns; but one has adopted the term "development planning," as it appears to be a convenient general term to use in dealing with the wider spheres of work.[50]

[50] McLean, *Regional and Town Planning*, 1.

Thus, the town becomes one point within a wider field of technocratic management. McLean quotes a fierce critique of human impact on the environment on page two:

> Within the last 150 years we have been committing a new crime. We have been utterly defacing the surface of the planet, ravaging its natural resources, destroying some beautiful species which, once gone, can never be replaced, and generally behaving like ill-conditioned savages. The vulgarity of the modern town discharges itself over the whole country. Hideous allotments and bungaloid growths make the approaches to any city repulsive, and what can we say of the reckless expenditure of coal and oil for the benefit of our spendthrift present generation? The approaching failure of the petroleum supplies will bring about great changes….
>
> It seems to me that science ought to advocate a return to much simpler conditions. A happy and healthy country would be inhabited – much more sparsely than England is at present – by a population mainly agricultural, with many small towns well supplied with schools, colleges, and laboratories.[51]

This is the first quotation in McLean's introduction, and brings back many themes we have seen in the preceding chapter in relation to Ebenezer Howard, Frank Shuman and the suburbs: the imminent exhaustion of fossil fuels; the ugliness of urban sprawl; the virtues of country living, agriculture and small towns. It is one of a series of quotations McLean marshals in order to demonstrate that the need for planning is widely acknowledged. He hesitated from fully embracing this dark view of human impact, but felt that it contained 'a certain element of truth'. He hoped that planning could 'prevent things from getting worse,' and that it represented an attempt to improve the lot of future generations.[52] Planning was, in McLean's view, a powerful tool for the improvement of human life, that would have implications running into the future. We have already seen how the past was also brought into this process in chapter three, but here we can view his more mature planning work in how it applied to Alexandria.

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[51] Dean Inge, Norman Lockyer Lecture on Scientific Ethics, London 1927; quoted in McLean, 2 [ellipsis original].
[52] McLean, 2.

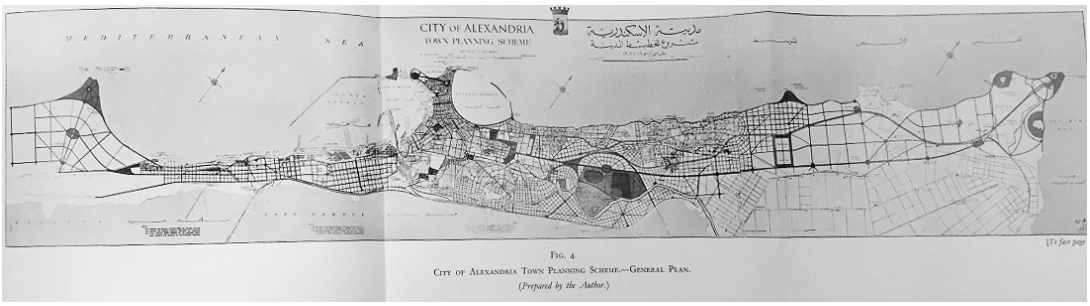

FIG. 4.
CITY OF ALEXANDRIA TOWN PLANNING SCHEME.—GENERAL PLAN.
(*Prepared by the Author.*)

Figure 6-21 McLean's plan for Alexandria, Regional and Town Planning, in principal and in practice, *facing page 61. Note the distinctive pair of bays, formed by sediment deposits on a Roman road to what was once an island.*

McLean said that little remained of ancient Alexandria and that the modern city sprang from the medieval town, but he gave little account of the latter and mostly compared his own plan with Ptolemaic Alexandria.[53] He even drew a comparison between Alexander the Great as the supposed planner of an ancient grid system and Kitchener's role in the early planning of Khartoum. By invoking the Greek roots of the city, McLean was reproducing a vision of history in which the main actors are Europeans, spreading their civilisation to the rest of the world. He placed his own plan into this narrative of domination. Further, such ways of thinking and writing Alexandria constructed the city itself as European, not African. It becomes an outpost of Greek empire, that had suffered an Arabic interlude before British rule could once again bring it into the fold of an imagined Western civilisation.

The plan itself, which was accepted by the city in 1921, extended Alexandria along the coast to the east and west. McLean argued that even as and when land was reclaimed for Lake Mariout to the south, that land would be better used for agriculture than building.[54] In this we might say he was adapting the ideas of the garden city movement to a coastal environment: rather than concentrating urban development at the centre of a series of concentric rings, he planned for it to be kept hemmed in along the coast, with agriculture close by on reclaimed land. The main detailed proposals in the plan concern the creation of wide avenues, new

[53] McLean, 60–62.
[54] McLean, 62.

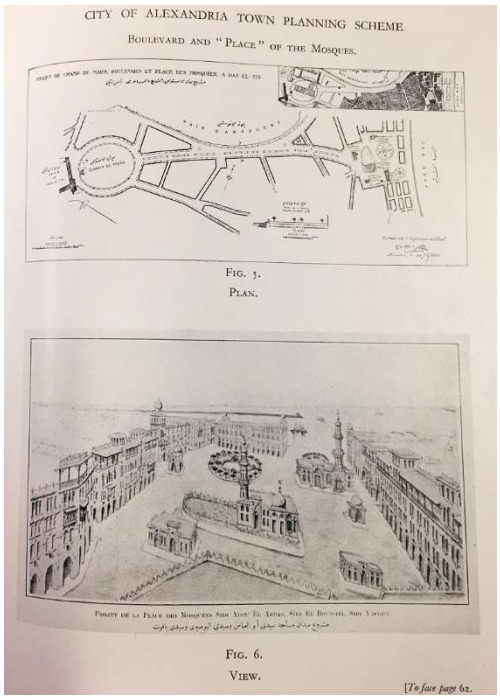

Figure 6-22 Boulevard and 'Place' of the Mosques, from W. H. McLean Regional and Town Planning, in principle and practice *(London: The Technical Press ltd., 1930), facing page 62.*

squares, parks and roads, and we might summarise the whole vision as one of spreading the urban: dense quarters are to be opened-up, large roads will connect new areas with the existing city, large squares will be the main traffic meeting points.[55] McLean's Alexandria would not only be larger, but also more physically open and more legible to the outsider.

The views included in McLean's plan evoke these wide streets. The viewer is raised somewhat above the buildings, able to take in not only the architecture but also some of the structure of the street plan, which would generally not be viewable to the pedestrian. Much of the architecture shown seems primarily to be there to illustrate the framework of the plan: four or five storey blocks with arcades at the ground floor frame the squares, which are differentiated by the major buildings that occupy the centre. The Place des Mosquées contains two fairly modest mosques, while the Place de la Gare shows the station in the background with a new public building with a baroque façade in the centre of the square. These spaces seem intended as grand urban statements, and in this they are more in the tradition of Hausmann's Paris than the modest towns proposed by Howard. The garden city idea was loose – some might say vague – enough to accommodate such

[55] McLean lists seven main proposals, all of which involve the creation of new/wider roads, new open spaces or new squares. McLean, 62–63.

statement pieces, however, as it was primarily concerned with the geography and economy of a city rather than architecture.

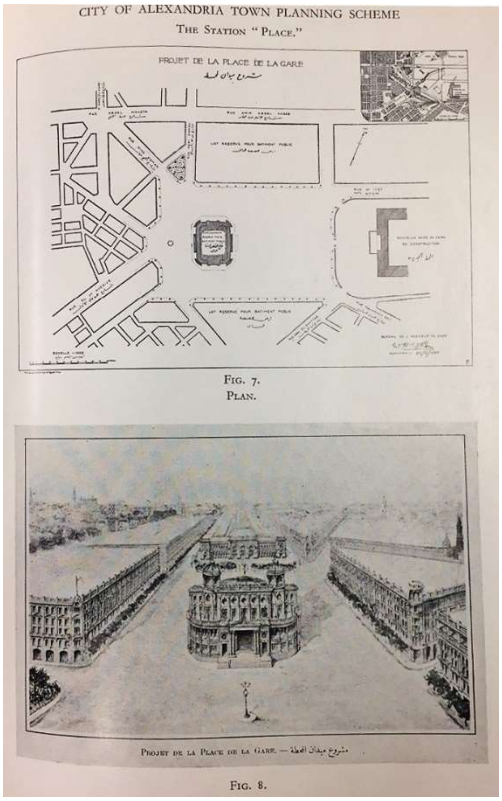

Figure 6-23 The Station 'Place', from W. H. McLean Regional and Town Planning, in principle and practice *(London: The Technical Press ltd., 1930), inserted with other images between pages 62-63.*

McLean discussed infrastructure more through text than illustrations. He first considers water under the broad heading of agriculture, which he describes as 'by far the most important problem in Egypt', before moving through sections on 'Water Supplies for Towns and Power', 'Water Power' and 'Drainage (Town and Land)'.[56] He draws out an interesting relationship between water flows and street planning:

> In the older parts of towns in Egypt, unless some town-planning improvements in the form of new streets, the widening of existing one, and the opening up of dead-ends, have been carried out before the introduction of water supply or drainage works, it is very difficult, if not sometimes impossible, to carry out such works.

In other words there was an order to how development needed to proceed to ensure that water supply, drainage systems and street layouts worked together rather than against one another. The reference to older parts of towns seems to be based on the assumption that these will likely have narrower, less regular streets that a modern town planner would wish to clear away in favour of wide boulevards, but that a water system based on the historic layout might make this too costly or complex to achieve. Drainage, McLean tells us, was a more pressing issue in the damp climate of Great Britain than in Egypt, and town drainage systems in the latter cost around twice as much as water supply systems.[57] Alexandria was among those

[56] McLean, 49–55.
[57] McLean, 55.

towns that had been drained, however, and its effluent was pumped out to the west of the city. McLean again highlights the interaction between the plan, street development and drainage:

> The town plan was co-ordinated with the drainage scheme, and sometimes street improvement works, in the older parts of the town, had to be hastened in order to permit of the execution of necessary main sewers and other works which were being carried out by the municipality under the author's supervision.

So again the planner is engaged in making not just a town but a whole environmental assemblage. Sewers, streets, irrigation, pumps and pipes had to work together to produce his vision of the modern city.[58]

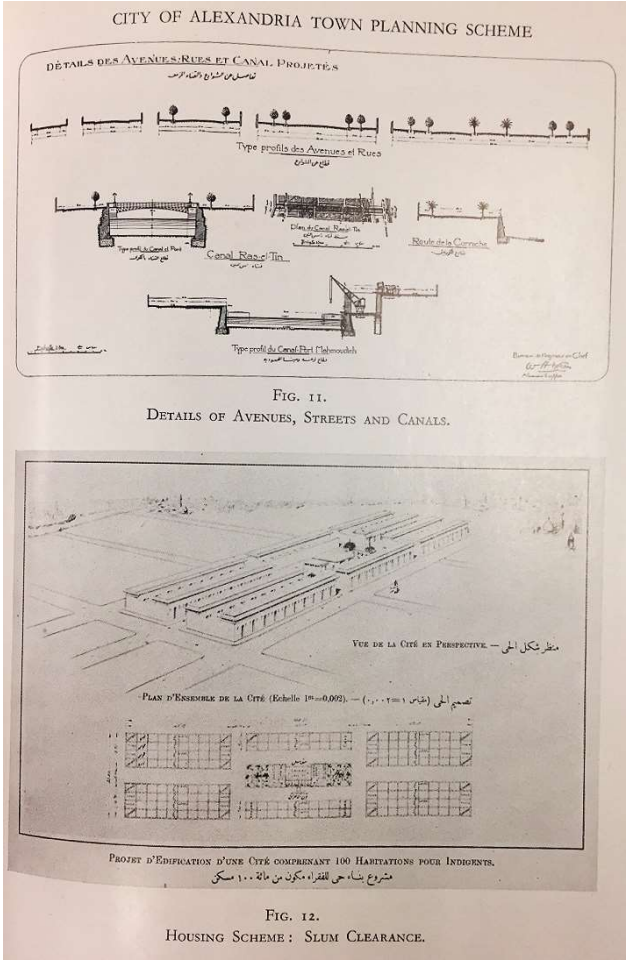

Figure 6-24 Details of avenues, streets and canals, from W. H. McLean Regional and Town Planning, in principle and practice (London: The Technical Press ltd., 1930), inserted with other images between pages 62-63.

Part of this involved considering the port of Alexandria and transport more broadly. Canals provided both irrigation and transport to the city, and were vital in distributing the cotton harvest.[59] McLean included canal cross-sections alongside street designs in his plan. Rail, of course, was the most broadly significant means of transport, but canals kept things waterborne and so could sometimes provide easier transfer than rail or road. The clogged remains of disused canals can still be found near the docks in

[58] For more on water infrastructure and the making of urban space see Gandy, *The Fabric of Space*.

[59] McLean, *Regional and Town Planning*, 32.

Alexandria, surplus to twenty-first century requirements. Container ships ply their trade through the Suez Canal, its greater width and depth allowing them to pass through without transferring the goods to smaller vessels.

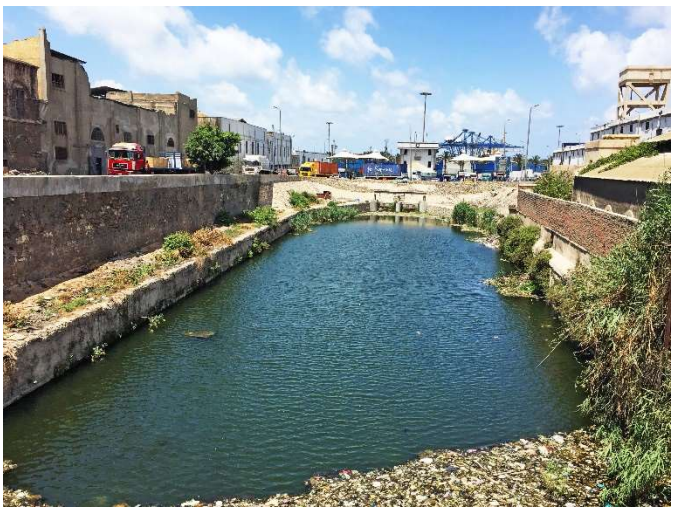

Figure 6-25 Canal in Alexandria, with docks in background, 2018. Photograph by the author.

McLean believed that town planning could be a means to improving the world. His individual plans were envisioned as only part of wider projects to manage regional, national and imperial space, and the principles underpinning these he held to be consistent across the world. The differences between planning in Britain and in Egypt were to do with specific issues of legislation or existing development, not because of any more essential contrast between the two. But these notionally universal principles were developed using Western thinkers and examples, so that in fact the concepts McLean deploys in his writing have little to do with the places in which he attempted to apply them. Thus Egypt is drawn into the production of the developing field of knowledge that was town planning, as a place with particular challenges concerning the nature of water supply etc. But the groundwork, the essential logic of town planning, remains rooted in Western concerns that are not modified in the colonial field. Here we see the limits of the use of Egypt as a laboratory: it was a place were ideas might be tested, but not where they could be developed or where theories might be generated.[60] Just as Western power spread outwards from Europe, so understandings of the city were seen as expanding from the minds of European and North American experts. This,

[60] The place of Africa in the generation of scientific knowledge has been examined in Tilley, *Africa as a Living Laboratory*; and of Egypt in the generation of economic knowledge in Mitchell, *Rule of Experts*.

at any rate, is how McLean presents his concepts: he proves their significance and outlines their details through extensive quoting of Western town planning discourse, and then fills in a few details concerning the cities he has experienced. His work thus reproduces a hierarchical model of knowledge with the West at the top.[61] Alexandria and other Egyptian towns are merely backward versions of cities already existing elsewhere, the planner sets out to pull them forward into a future he has already defined.

V. Conclusions

The Europeans who disembarked at Alexandria and Port Said during the colonial era were not really creeping their way into an unknown place. Literary and visual culture established various ways of seeing the region, and military and technocratic discourses expanded on these. The delta ports had an ambiguous position within this set of cultural constructions, for they were the site where Westerners transferred into Egypt and began to immerse themselves in its complex history and iconography.[62] Alexandria was a site that brought together many tangled histories, including the Roman and the Greek as well as the Egyptian, and this continued in the colonial era as different cultures made their homes in its streets. Port Said, on the other hand, was a symbol of urban modernity: it was an artificial construction, at the heart of the global trading system, demonstrating human control over the environment, and at the same time a site of sin and excess representing the tempting vices of the East. But all of these ideas attached to the cities themselves operate somewhat separately from ideas of Egypt and the Nile valley more broadly: in giving her classic account of travel on the Nile, Amelia Edwards felt no need to go into detail about the ancient city through which she arrived. Emily Hornby did describe Port Said but did not linger in the town, rushing quickly southwards to

[61] On the ways in which Europe is produced as a conceptual model see Chakrabarty, *Provincializing Europe*.

[62] On ambiguity and ambiguation in the construction of colonial space see the introduction to Christensen, *Germany and the Ottoman Railways*.

Cairo and beyond. The ports, and the delta environments which lay so close to their borders, were not a significant part of the cultural imaginary of Egypt as a whole. To encounter the 'real' Egypt, a traveller had to make it to the Arab capital of Cairo and then south down the river. The cosmopolitan ideal that has been elaborated to understand these cities, then, serves to separate them from the rest of Egypt by immersing them in Mediterranean and global connections rather than local ties.

The environment that Edwards and Hornby first encountered in the delta was not a significant part of their accounts of the Nile valley, because again the delta was seen as lying outside the vision of Egypt as a desert with a river. But the agricultural system that supported life along this river was centred on the fertile earth of the delta, the region built by the Nile's rich flood. This shifting, mobile environment shaped by sea and river also helped build the ports through which Hornby and Edwards entered Egypt. Alexandria's bays have been shaped over centuries by the actions of humans and the sea, and in expanding the city McLean sought to channel its growth east and west in order to maximise the use of the delta for agriculture. Port Said was created alongside the Suez Canal but took advantage of the advancing coastline to grow northwards as sea gave way to land. These cities have been lively sites of cultural mixing and confrontation but are also environmental meeting points, in which urban form has to respond to a mobile coastline.

Colonial power was not only a matter of cultural or environmental domination. It was underpinned by necropolitics, the power over life and death, and this also produced urban visions. The stark images produced by Captain Clarke show a city reduced to its military installations and stripped of all other significance. The life of the streets is pushed aside in order to see clearly how this city might defend itself or how an attacker might damage it. Without such knowledge and practice the empire could not assert or maintain its power, so that images like these are as

central to the logics of colonialism as town planning, if not more so. It was also military power over this region that would end the British period of Egyptian history, when President Nasser nationalised the Suez Canal and the UK was unable to take it back.

The delta coast is now in retreat, and of all the cities in the world Alexandria is among the most vulnerable to rising sea levels. By the 2070s, it may house a population of over four million people at high risk of flooding.[63] The thin strip of land between sea and lake is shrinking as the sea takes back the delta. This is not only part of a global history of climate change driven by fossil fuels, but also a regional history of changes to the Nile that have reduced the power of its flood and the quantity of silt it carries to the delta each year.[64] The river's ability to build the land has been cut-off by repeated attempts to re-engineer its flow into something more predictable, and without the full riches of the flood the delta is changing. The cities of Egypt are tangled in this developing environmental history, as part of the land- and waterscapes of the delta. Imagining a boundary between the urban and the environment can only serve to blind us to these relationships. There are no walls strong enough to keep back the tides of history.

[63] Susan Hanson et al., 'A Global Ranking of Port Cities with High Exposure to Climate Extremes', *Climatic Change* 104, no. 1 (1 January 2011): 89–111, https://doi.org/10.1007/s10584-010-9977-4 places Alexandria 11th worldwide in terms of the projected population at risk of floods by the 2070s, above Tokyo, New York and Lagos but lower than Bangkok, Shanghai, Ho Chi Minh City or Kolkata. It is the most at risk in Africa by this measure.

[64] White, 'The Environmental Effects of the High Dam at Aswan'; Hamza, 'The Nile Delta'.

Chapter 7

Conclusion: Architectural history in the era of climate chaos

> This red water comes from the scourings of the volcanic plateau of Abyssinia by the Blue Nile and the Atbarah. Rich in mud and rich in manures, this red water is the creator of Egypt. Egypt is nothing more than the deposit left by the Nile in flood.
>
> William Willcocks, *The Nile in 1904*

> It matters what matters we use to think other matters with; it matters what stories we tell to tell other stories with; it matters what knots knot knots, what thoughts think thoughts, what descriptions describe descriptions, what ties tie ties. It matters what stories make worlds, what worlds make stories.
>
> Donna Haraway, *Staying with the Trouble: Making Kin in the Chthulucene*

We have now traced the Nile from its confluence to the Mediterranean. We have seen the creation of a colonial capital, the building of the first dam across the river, experiments with environmental control on the river's banks, and the ways in which ports mediated the relationship between global empires and their colonies. The complex ways in which the built environment is assembled have included thoughts on water, war, railways, soil, historical knowledge, geopolitical power, expertise and nationhood. In this concluding essay I will pull at some of these threads to develop the wider argument of the thesis and indicate possible future directions for research. Running through what follows is the key question of how we construct and tell stories about the past, how sources and existing arguments can be woven together to produce a richer fabric of knowledge. In particular, I will argue that architectural and urban historians have yet to realise how central they could be to wider discussions currently taking place in the humanities and beyond. I will seek to sketch out a research agenda that responds to Donna Haraway's point about world-making and acknowledges the need for material histories, without falling into the reductionism of William Willcocks' description of Egypt as 'nothing more' than

a flood deposit. This conclusion begins from what has been said in the preceding chapters and gradually expands to larger questions about the environment and the making of space.

Central to this history is an argument about the nature of regions. By working across Egyptian and Sudanese sites to develop a Nile valley history, I have sought to show how space was assembled, invoked, and managed by colonial forces. The ways in which each intervention in the environment or in urban space was imagined as part of a grander mission to impose order on supposedly disordered landscapes comes through clearly in a range of voices: town planners, imperial governors, British travellers and politicians shared an understanding of what empire was for and what it meant in the Nile valley. What the analysis presented here provides is a far more detailed understanding of how this manifested in particular projects than any that can be gleaned from existing work. It is one thing to say that the building of Khartoum was part of a general scheme to dominate the Nile valley, but we can now say that in many ways Sudan's capital region acted as a site of concentration, where ideas of order and power were performed in an elaborate spectacle of imperial urbanism. Like most theatrical productions, this involved a close control of space that was, at the same time, in many ways more style than substance. By contrast, a dam might appear to be a largely practical intervention in the hydrology of the Nile. But we have seen that this too was heavy with symbolism, so much so that one can find traces of anxiety even in the documents and images that were supposed to promote it. The grand scenes of work and domination produced by D. S. George also unwittingly display the fragility of imperial ideas, the ways in which the persistent will to conquest implied the constant closeness of failure. Frank Shuman experimented with a different kind of mastery of the natural world in Cairo's suburbs. Just as new garden city inspired developments were intended to cure the ills of modern urbanism, so Shuman hoped that his solar power plant would revolutionise the production of power, ushering in a new era in which the

tropical regions of the world would be largely fuelled by the sun. Both these dreams have evolved and persisted, albeit in differing ways: Egypt has often tried to replace Cairo, as we have seen, and contemporary technologists continue to try to improve our use of sun power. In Alexandria and Port Said, we traced how time and culture shape specific urban geographies, and how they can give similar sites distinct meanings. Although the focus of this thesis has always been on the late nineteenth and early twentieth centuries, it has ranged much further than this in places, with mention of events from the time of Alexander the Great to the twenty-first century. The fragile assembling of space that was central to the operation of empire has been found to be multiple, various, responsive to specific sites, but also insistent in its obsession with specific kinds of order, display, power and domination.[1] The region, then, emerges from this analysis as a contested site, in which some forces may be seeking unity while others encourage fragmentation. In the case of a large region under one governing power, it is possible for officials seeking to pull a region together to unwittingly lay the groundwork for later disintegration. That imperial rule over the Nile valley could be *both* a unifying force *and* establish practices that ultimately led to differential development and division into smaller nations is not a contradictory claim. It emerges clearly from the analysis of individual sites: imperial governance was different in different areas, in spite of its essentially shared aims. The ways in which it manifested depended upon the geographical, cultural, political and economic specifics of each site.

Just as imperial officials sought power over space, they also sought to master time. This thesis has not considered this at the level of the individual, in terms of the imposition of clock time and its associated discipline.[2] Nonetheless, other attempts

[1] Precisely the kind of ideology of domination outlined in Scott, *Seeing Like a State*; for a more conceptual analysis see Latour, *We Have Never Been Modern*.

[2] An excellent thesis on this already exists for Egypt, see Barak, 'Egyptian Times'; later published as *On Time*; the classic study of the importance of clock time in industrial capitalism is E. P. Thompson, 'Time, Work-Discipline, and Industrial Capitalism', *Past & Present*, no. 38 (1967): 56–97.

to master time have come through clearly. The Aswan Dam, and the other hydrological management projects of the period, were chiefly concerned with regulating water. In other words, with imposing the discipline of predictability on the environment. Engineers such as William Willcocks and William Garstin sought to convert the Nile into a dependable water pipe, abolishing the role of the annual flood cycle. Cyclical time was seen as holding back the development of Egypt's economy, restricting its entry into the global networks of trade and finance dominated by Europe's imperial powers. Officials trying to master the Nile were trying to end the river's relationship with time, to transform its natural ebb and flow into a regulated stream. Meanwhile, those developing the towns of the Nile valley sought to conquer time in a different way. By writing histories of Khartoum, William McLean and Edwin Sarsfield-Hall staked a claim on the city's future as well as its past. By defining a particular kind of knowledge about a city, both sought to create a discourse in which their own vision of urban development seemed a natural and necessary progression. These are histories in which the present, and indeed the future, seems to be more important than the past, and versions of this approach have persisted. Just as engineers sought to end the rhythms of river flooding, so urban planners sought to obscure the specificities of the past so that the logic of their present interpretations could dominate the whole temporal field. This kind of history-writing tried to tame time rather than to enliven the past. Both town planners and hydrological engineers were, in different ways, attempting to defuse the action of time, to establish a regime whose rigid logic excluded chance and rhythm. Their struggles to build this regime were a confrontation with the water, soil and geology of the Nile valley.

So far I have discussed official projects, but this thesis also claims that travel writers, journalists and others who gave accounts of the Nile valley should be considered part of the broader project of empire-building. Certainly officials sought to convince such people that they could be part of this work, but what traces of imperial

mission can be found in the writings of Amelia Edwards or Emily Hornby? Firstly, writers such as this contribute to the British domination of time: both give accounts of Egypt that present it as essentially without time. That is to say that the history of the pharaohs and the pyramids is so central to their writing and imagination of Egypt that they present a place in which nothing much seems to have changed before the nineteenth century.[3] Islamic history is encountered only incidentally, through certain mosques and some details of contemporary Egypt; there is no sense of the relationship between the ancient and medieval periods.[4] Hornby's passing references to the Aswan Dam and encounters with imperial officials also provide further insights into how imperialists presented themselves to European visitors. The bustling efforts to demonstrate progress reinforce the importance of performance: it was not enough to govern, it was vital to be seen to be governing. The accounts of imperial improvements published in British newspapers are another indication of this need, often amounting to little more than lists of development projects. All this suggests a keen desire on the part of British officials in Egypt and Sudan to generate support for their enterprise at home and elsewhere. The eyes of travel writers were guided towards elements of imperialism that officials wanted to promote, and that readers presumably also wanted to consume. The importance of war as a maker of urban space is almost entirely absent from these accounts. When it appears, it is generally only as a kind of prelude to later building projects rather than as something that left a lasting mark.

War shapes urban development in a wide range of ways, only some of which have been explored here. Nonetheless, it is clear from the case studies that military violence has left a distinctive trace in at least some colonial cities. Khartoum, born as an Egyptian military outpost, was destroyed in the aftermath of war and then

[3] The classic account of how the past obscured the reality of Egypt is Mitchell, *Colonising Egypt*.

[4] This period saw the first efforts to develop a coherent understanding of Egypt's Islamic built heritage, a process deeply connected with representations of Cairo. See Sanders, *Creating Medieval Cairo*; and AlSayyad, Bierman, and Rabbat, *Making Cairo Medieval*.

rebuilt as the capital of Anglo-Egyptian Sudan. Its first designers and governors were military men. They sought to create a city of straight lines and clear vistas, partly as a theatre in which to display imperial might and partly to ensure that military forces could move rapidly through the urban fabric. They had little interest in direct intervention in Omdurman, so long as it could continue to house most of the local population and did not become a hotbed of rebellion. While they were happy to denigrate it as a disordered mess of African huts, they also used building regulations to ensure that it remained largely in this condition. They drew maps showing large straight roads through Omdurman, but hoped that the routes for these roads would clear themselves if building and repair were banned rather than requiring any direct intervention.[5] Khartoum North, a new creation of the Anglo-Egyptian era, was a collection of engineering huts and warehouses that reflected the border town of Wadi Halfa from which the Sudan Military Railway had been built. The logic of Sudan's capital region, then, carries clear marks of war and military rule. Alexandria and Port Said do not carry the marks of war so clearly in their morphology, but both were key nodes in imperial power. The British era in the Nile valley began with the bombardment of Alexandria and ended with Egyptian nationalisation of the Suez Canal, to which Port Said was the entry. The ability of an imperial power to demonstrate its military superiority over port cities was vital in the age of empire. Two particular aspects of urban war have emerged as important from the cases studied here: in some sites, war has a direct role in shaping urban form; in others the potential for exercising military control is fundamental to understanding a particular city's importance, whether or not this is marked directly in the built environment. Even in the latter case, assessing the role of military priorities is important: they are a particular mode of understanding cities, and one which holds special influence in the logics of the state. Although the significance of war is not

[5] The ways in which colonial urbanism (re)produced the chaos it claimed to remedy has been skilfully traced in Bissell, *Urban Design, Chaos, and Colonial Power in Zanzibar*.

unique to colonial cities, there are ways in which it has specific meaning in these settings. The question of the importance of military logic in urban developments is one that could be taken much further, and which would benefit from comparative work across different global settings.

Another thread that reaches out from this thesis to global histories is that of water in the construction of urban environments and regions.[6] The world's longest river has not, largely, been understood through its relationship to cities, but to agriculture. This study shows that the urbanism of this region is fundamentally shaped by the relationship to water, the need to keep it moving, its general scarcity. The built environment of the imperial Nile valley was an attempt to remake a landscape of desert and river. Urbanism was bound up in this process just as much as engineering or agriculture were. Indeed, the dream of bringing life to the desert is, as we have seen, very much alive in the imagery of the proposed new capital in Egypt. To imagine Cairo, Alexandria, Port Said or Khartoum without considering the environmental history of these sites is to blind ourselves to much of what makes these cities particular. Indeed, even a structure like the Aswan Dam has a fundamental relationship to the urban. The Nile valley might not appear to be urban in essence, but this thesis has shown that the management of space in the region during a key period was deeply concerned with cities and urbanisation. The postcolonial population growth in Cairo is just one instance of a much longer history in which the whole valley concentrates people and power in distinct urban sites, with much of the rest given over to feeding the needs of these cities. This thesis has moved between urban sites and others because these environments are mutually constructive, not simply co-existent.[7] In this sense the cities studied here

[6] Work in this area has been growing, see Bhattacharyya, *Empire and Ecology in the Bengal Delta*; Kelly et al., *Rivers of the Anthropocene*; Castonguay and Evenden, *Urban Rivers*; White, *The Organic Machine*.

[7] Again this position as such is not new, but the specifics of the networks traced here have not been examined before. For examples of earlier histories that move between the urban and other scales (as well as those already mentioned) see Gandy, *Concrete and Clay*; and Cronon, *Nature's Metropolis*; a more conceptual argument for why human constructs are always already entangled with non-human actants, see Latour, *Facing Gaia*.

depend upon a complex geography of water, desert and agriculture that makes them possible and defines their limits.

The key question that has run through the thesis is: to what extent, and in what ways, did the colonial architecture and urbanism of Egypt and Sudan depend upon the Nile valley environment? It is one thing to portray various connections between the two, but how did river, delta and desert actually define or delimit what was built? In portraying the built environment as a complex gathering together of various cultural and material actants, one might lose sight of the specific ways in which individual things act to create and shape space. So in order to draw out the connections more clearly, let us examine precisely the ways in which the Nile valley contributed to the making of space under colonialism.

Archaeologist Ian Hodder identifies two different senses in which the word 'dependence' might be used to think through the relationships between things.[8] The first is in the sense of enabling: one thing might make some type of action or behaviour possible. So a bicycle enables the riding of a bicycle, a door enables the opening and closing of space, as well as (metaphorically) of possibilities. You cannot ride a bicycle unless you have one to hand, or open or close a door that is not there, but equally the thing does not make you perform the action. Your bicycle riding depends upon the bicycle but is not determined by it. Indeed, only through the deployment of a learnt skill can you take advantage of the possibility at all. The second meaning of dependence is as a limit, a denial of possibility, an obstacle, a cannot to the can of the first meaning. Thus, water cannot flow uphill, and all attempts to move it are shaped by this essential characteristic. Any hydrological system depends upon this and other facts about the behaviour of water (such as weight, viscosity, boiling point etc.) in the sense that if these things were not true

[8] Ian Hodder, *Entangled: An Archaeology of the Relationships between Humans and Things* (Malden, MA: Wiley-Blackwell, 2012), 17–27.

then one could come up with some completely different approaches. Dependencies, then, include possibilities to be taken advantage of and limitations to be worked with or around.

Various kinds of dependence have emerged from these chapters. We have seen how the urban form of Khartoum was divided by the Nile; how water defined the limits of Alexandria and Port Said; and how the suburbs of Cairo drew the city towards the river to the west. There is not one fixed meaning to the relationship between water and urban form in these sites: rather, each shows a complex interplay between water and other factors, so that different kinds of dependence and causality can be read. All the cities were affected by the need to ensure a good supply of water to agricultural land: in Khartoum and Cairo this meant ensuring the river could flow freely as well as being exploited, in Alexandria and Port Said it meant that any delta land that became available would be prioritised for farming over urban use. As hydrological projects transformed the Nile, the environment in which these cities operated evolved: Cairo could expand westwards in part because the flood plain was reduced by the Aswan Dam and the renewed barrages; Khartoum was vital in the new system of Nile control because the flood could be measured there; Alexandria and Port Said were less directly part of changes to the river, but had a vital role in channelling growing agricultural output to the imperial economy. In this role they depended on a wider waterscape constructed by the delta, the Mediterranean and the Suez Canal. Each of the cities we have studied has evolved through changing environmental relationships as well as what have traditionally been thought of as architectural or urban dynamics.

This insight, developed from our study of the Nile and its cities, has wider implications for how we tell architectural histories. But before expanding on this, it is important to acknowledge the finite nature of the research presented here, and consider what might be added to it to deepen our understanding of this region and

the British Empire. What follows are some of the major issues that this thesis could have explored in more depth.

I. Areas for further research

Firstly, the Nile was not only managed through the Aswan Dam. As has been noted several times, this was just one part of a system that included the barrages further north, and would also have included the Jonglei Canal if this had been undertaken. The partial nature of this project is an important part of understanding the divided politics of the British Nile valley. In part, these issues have been left underdeveloped because they have been looked at by other historians, notably Terje Tvedt and Robert Collins.[9] But there would certainly be scope for more analysis of how these projects were promoted and imagined, in the mode of chapter four's analysis of D. S. George's photographs of the first Aswan Dam. The complex relationship between these modes of image-making and the wider production of the Nile valley as a visual site has yet to be fully developed, although reading this thesis alongside Jennifer Derr's work should reveal some of the scope of such a project.[10] In planning a future publication of this study, I will look at how to expand chapter four's analysis beyond the dam to the wider field of hydrological development projects.

This thesis has laid great emphasis on technological and infrastructural development, but the Suez Canal has made only glancing appearances. In another version of this project it might have been a chief focus, but I have primarily been interested in the Nile valley under the British Empire, and the development of the canal belongs to Ottoman and French histories as well. This is, of course, not to say it has no relevance to the British period, and I hope that this has been clear throughout the text. In fact the connection between the Suez Canal and the built

[9] Tvedt, *The River Nile in the Age of the British*; Collins, *The Waters of the Nile*; see also Collins, *The Waters of the Nile: Bibliography*.

[10] Derr, 'Drafting a Map of Colonial Egypt'; Derr, *The Lived Nile* sadly the latter was published too late for me to take full advantage of it in developing this thesis.

environment has come under quite extensive study in recent years from historians such as Lucia Carminati and Mercedes Volait.[11] What I have sought to do is keep the focus on the river itself, thus extending the analysis of the built environment over a much wider geographical area than the focus on northern Egypt that is found in much existing work. It is the Nile that makes Sudan part of this history, not the Suez Canal, and in extending analysis to Sudan I have sacrificed a detailed account of the canal's role in urban space, beyond what is discussed in chapter six concerning Port Said.

Sudan itself could have been more extensively analysed, and in this area there is much work still to be done. The urban spaces of Sudan were key to British power, even if most of the country remained rural in character. Indeed, even in determinedly rural areas buildings had an important role to play in the performance of British power. There is, as yet, no scholarly study of the architectural history of Sudan under the British Empire and this would be a valuable contribution to knowledge. This was simply beyond the scope of a project concerned with the Nile valley as a whole, but I should make clear that there are huge areas of Sudan that have very little to do with the kinds of sites examined here. A study of these would be of value to Sudanese history and to the architectural history of empire, especially if it were undertaken in the spirit of the current study, i.e. by bringing environmental and architectural histories together. This could help us to understand more of the variegated practices of colonialism in different environments.

Finally, developing from this, there is the question of the construction of regional relationships. I have primarily been treating the Nile valley as its own space, but of course it is also an intersection of flows from the Mediterranean, the Middle East,

[11] Carminati, 'Port Said and Ismailia as Desert Marvels'; Céline Frémaux and Mercedes Volait, 'Inventing Space in the Age of Empire: Planning Experiments and Achievements along Suez Canal in Egypt (1859–1956)', *Planning Perspectives* 24, no. 2 (April 2009): 255–62, https://doi.org/10.1080/02665430902734350.

the Indian Ocean, east and north Africa. There would certainly be value in comparative analysis with other regions, and there is much excellent recent work that could contribute to this by historians such as William Bissell, Sarah Longair and Prita Meier, to name a few.[12] In order to maintain focus on the British Empire and the Nile valley, I have largely left aside such comparisons or mentioned them only in passing. Part of this project has also been comparison within the region, and to keep this clear it was necessary to spend most time thinking about the sites themselves rather than adding other cases.

These are the major areas left underdeveloped in this thesis, and I look forward to other scholars taking them up in the future. There is a broader agenda, however, hinted at throughout this text but not yet fully elaborated on. I wish to use the remainder of this essay to outline an agenda for architectural history that can put it at the centre of current conceptual debates in the humanities connected to the environment and our ways of living.

II. Telling new architectural histories

If the humanities have any public significance in the coming decades of the twenty-first century, it is as a series of attempts to understand how our species can continue to live upon a planet that it is in the process of transforming.[13] This might seem a distant question from the usual concerns of architectural historians, to have little to do with the delicate craft of tracing the history of a building from papers, drawings, plans, descriptions and physical remains. But I will argue in what follows that, in fact, architectural and urban histories have a vital part to play in these coming experiments in humanist thought.[14] The ways of thinking about human space

[12] Bissell, *Urban Design, Chaos, and Colonial Power in Zanzibar*; Longair, 'Visions of the Global'; Meier, *Swahili Port Cities*.

[13] Various manifestations of this problem can be found in Chakrabarty, 'The Climate of History'; Donna Haraway, *Staying with the Trouble: Making Kin in the Chthulucene*, Experimental Future (Durham, North Carolina: Duke University Press, 2016); Latour, *Facing Gaia*.

[14] I wrote this before the Architectural Review's Soil special issue was released. See Manon Mollard, 'Editorial: Breaking New Ground', Architectural Review, 29 January 2020, https://www.architectural-review.com/essays/letters-from-the-editor/editorial-breaking-new-ground/10046122.article.

available from existing intellectual traditions can be transformed and reinvigorated by turning to the urgent environmental questions of our age. In order to make this clear, a brief sketch of the conceptual developments in twentieth century architectural history is needed.

Architectural Modernism was accompanied by architectural histories that sought to root this stylistic movement in technological developments in the nineteenth century and earlier. Sigfried Giedion argued that the remains of the past should be peeled back and pushed aside to reveal the antecedents of Modernism, that the role of the twentieth century historian was 'to extract from the vast complexity of the past those elements that will be the point of departure for the future.'[15] Nikolaus Pevsner, whose interest in historical buildings for their own sake was deeper, nonetheless constructed a similar narrative in *The Sources of Modern Architecture and Design*.[16] The buildings of the past only attain importance, in this kind of analysis, from their influence on a specific strand of stylistic development. The historian chooses what to focus on through a version of Darwinian selection, in which anything that did not contribute to the work of Modernism – the style fit for the modern world – is not worth thinking about.

Strong critiques of this Modernist method were put forward in the 1970s. Manfredo Tafuri labelled such histories 'operative criticism', a mode of thought in which the writer feels that they already know the future and that their role is to manipulate the material of the past so that it matches this.[17] He argued that, instead, architectural historians should be concerned with the dynamics of history, the complex relationships between buildings and the ongoing crises of capitalism.[18]

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[15] Giedion, *Building in France, Building in Iron, Building in Ferro-Concrete*, 85.

[16] Nikolaus Pevsner, *The Sources of Modern Architecture and Design*, 1989 reprint (London: Thames and Hudson, 1968); Giedion's argumentation is more nuanced in his later works such as Giedion, *Space, Time and Architecture*; and *Mechanization Takes Command*.

[17] Manfredo Tafuri, *Theories and History of Architecture* (London: Granada, 1980), 141.

[18] Manfredo Tafuri, *Architecture and Utopia: Design and Capitalist Development* (Cambridge, Massachussetts and London: The MIT Press, 1976).

From a very different political starting point, David Watkin accused Pevsner of seeking to use architectural history to build a collective society, and of distorting the past in order to do so.[19] Whereas Tafuri felt that the specific concerns of the Modernists had blinded them to the reality of capitalist history, Watkin argued that the very act of imposing an overall narrative on architectural history was misguided, and that what mattered was tracing stylistic changes through time. The crux of both critiques, however, is that architectural history is its own craft, and is not simply a servant to the favoured architectural style of the moment.

Is there a way in which architectural history can speak to the future without adopting an operative approach? Can the historian concerned with how we live now tell useful stories without abusing the historical record? If there is a role for architectural history within the environmental humanities, these questions need to be confronted.

The current theoretical discussions concerning the climate crisis and how to conceptualise it have opened a space in which we may be able to imagine new ways of telling architectural history. There are complex disputes concerning what to call this era of crisis, which may be a new geological time period: should it be called the Anthropocene?[20] The Capitalocene?[21] The Chthulucene?[22] Is there one of it or billions?[23] Such a tangle of hot questions and neologisms may not seem a promising area in which to seek disciplinary clarity, but in fact the lively threads of this discussion of the human relationship with the environment can help us reimagine what architectural history might be.

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[19] David Watkin, *Morality and Architecture: The Development of a Theme in Architectural History and Theory from the Gothic Revival to the Modern Movement* (Oxford: Oxford University Press, 1977).

[20] Latour, *Facing Gaia*.

[21] T. J. Demos, *Against the Anthropocene: Visual Culture and Environment Today* (Berlin: Sternberg Press, 2017).

[22] Haraway, *Staying with the Trouble*.

[23] Kathryn Yusoff, *A Billion Black Anthropocenes or None*, Forerunners (Minneapolis: University of Minnesota Press, 2018).

The central question running through all of this work is how we live on a warming planet, among creatures threatened with extinction, and in destabilised environments. The future, that Modernists once seemed to have quite clearly worked out, has been thrown into a state of permanent crisis more similar to Tafuri's view of history than to Giedion's.[24] There can be no return to ways of doing history that claim to know what is coming next. But history is ultimately about change through time, about that ever-moving moment that is the present, about how one thing became another. This might seem to have some potential use in imagining new ways of living.

Scholars concerned with analysing the meaning of the climate crisis for the humanities have generally emphasised the importance of connections, relationships and multiple actors in our accounts of events. Dipesh Chakrabarty has urged us to consider the ways in which humanity behaves as a species, going beyond conventional historical accounts rooted in the liberal subject; Bruno Latour has argued that agency is not a characteristic held by humans alone but a feature of how we give accounts of the world; Jane Bennett has emphasised the power of things and matter; Donna Haraway has shown how we make ourselves through interaction with other existences, and called on us to face our current crisis by deepening these connections.[25] All of these arguments imply thinking deeply about how we exist in the world. A crucial part of this is how we make human habitats.[26]

Architectural historians are well-versed in taking account of non-human actors in their analyses. There are materials, form, climate, light and sound, among other things, to be considered in how space is made, and all of these are often discussed. There are the practices of architects and builders, the ways that drawings, plans,

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[24] One might look to Latour, *We Have Never Been Modern* to consider the relationship between the Modernist movement in architecture and the wider nature of modernity as a project.

[25] Chakrabarty, 'The Climate of History', 212–20 Thesis 3; Latour, *Facing Gaia*, 49–54; Bennett, *Vibrant Matter*; Haraway, *Staying with the Trouble*.

[26] I am not the first to bring together ecological and architectural concerns, see for example Rachel Armstrong, *Liquid Life: On Non-Linear Materiality*, 1st edition (Santa Barbara, CA: Punctum Books, 2019).

contracts and other objects feed into the construction of a building. Bringing these considerations into conversation with intellectual and cultural history is at the heart of how architectural history is currently practiced. We already know that buildings are made through a complex collaboration between people, things, ideas, legal frameworks and so on.

What has perhaps been lacking in many architectural histories is a fuller account of how buildings are placed within a wider environmental field; how a river, a sea, a sewer system and a street plan might act together in constructing an environment for humans and others.[27] Scholars such as Swati Chattopadhyay and Peter Christensen have brought infrastructure to the forefront of their analyses, but this is one aspect of how the built environment interacts with the so-called natural environment.[28] Understanding the wider process means considering infrastructure in terms of how it works with and against what is already there, how it seeks to make a different kind of environment by controlling flows. In developing these accounts, the materiality of the environment should be considered just as carefully as the materiality of the human-made structures, so that water and soil are taken as seriously as concrete and ashlar. If the history of human structures is considered in these terms, a new way of looking at the complexities of our interactions with the environment will begin to be opened up. This will involve seeing a ploughed field, a carefully guarded wilderness, a greenhouse, a bicycle shed and Lincoln Cathedral as all belonging to similar networks of placemaking and building. Some, of course, involve certain kinds of activity more than others, and some of these have historically been fenced-off and identified as architecture: complex design processes, aesthetic meanings embedded in ongoing cultural discourses and so on. Bringing all these types of structure together does not mean that we abandon all ways of

[27] For an example of this mode of thought see Gandy, *The Fabric of Space*.

[28] Chattopadhyay, *Unlearning the City*; Peter H. Christensen, 'A Bridge Somewhere: Infrastructure and Materiality', *InVisible Culture: An Electronic Journal for Visual Culture* 26 (6 May 2017), https://ivc.lib.rochester.edu/a-bridge-somewhere-infrastructure-and-materiality/; Christensen, *Germany and the Ottoman Railways*.

distinguishing their differences, or that we will no longer be able to tell them apart. By acknowledging their connections and examining their different places within a network of spatial production, I would argue that we in fact come to know them better. If we learn to trace new kinds of connection between the earth on which buildings sit and the structures and cities that people produce then we will be discovering new ways of enlivening the past and our physical environment, not doing away with coherent thought.

Architectural and urban histories written in this vein might help open our imaginations to possible environmental futures. By giving life to the changing historical relationships between human societies and their habitats, we can hope to contribute to discussions of what the future of urban life might look like. This does not mean that historians have to adopt the attitudes of McLean, Howard or Giedion: we do not need to envision a future and write a history that will produce such an outcome. That would be to reverse the flow of good historical ideas; what I am proposing is that an enriched understanding of the environmental aspects of architectural history can help frame, develop and perhaps answer the important contemporary questions that we face. History can be a means to open the field of possibilities, rather than a way of restricting it as it was in the hands of colonialists and Modernists alike.[29] Learning to see Alexandria as a mobile physical environment that has ebbed and flowed like the delta around it can help set questions concerning how to approach coming shifts in urban ecology. This is not to suggest that either the past or the future hold all the analytical answers, but to understand that both are caught up in webs of ongoing relations, and that architectural history is one way of tracing, exploring and understanding these connections. In Haraway's terms, I am calling for architectural history to tell better stories of environmental relations.

[29] Theodore Zeldin, *An Intimate History of Humanity* (London: Vintage books, 1998), 13–21 argues, in a very different context, for the value of history as a way of opening up possibilities and changing our shared world views.

Throughout this thesis, I have drawn on many colonial writers who have argued in various terms for the centrality of the Nile in understanding modern Egypt and Sudan. I hope that the accounts I have given of the various sites studied here have enlivened this relationship, by bringing out the ways in which people responded to the environment which in turn was responsive to them. One risk of such material histories is that they fall into the reductionism of William Willcocks; I am not claiming that 'Egypt is nothing more than the deposit left by the Nile in flood.' The claim of this history, on the contrary, is that the built environment of the British Empire in the Nile valley was a complex collaboration between people, soil, river and desert. One of these is not master of the other, the purpose of this analysis is not to reverse relationships so that the subject is made the ruler. What I hope to have shown is that it is through interactions that space was made. I am arguing for historical analyses immersed in such interactions, that could bring to the surface the many ways people have made their places, and help us to imagine new futures from our time of crisis. A fluid architectural history, flowing into all our visions of the past and of the worlds to come.

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